

26A6642BB Revision 1 January 2006

ESBWR Design Control Document Tier 2 Chapter 9 Auxiliary Systems Appendix 9A



Contents

9A. Fire Hazards Analysis	9A.1-1
9A.1 Introduction	
9A.2 Analysis Criteria	9A.2-1
9A.2.1 Codes and Standards	9A.2-1
9A.2.2 Fire Area Separation and Fire Equipment Drawings	9A.2-1
9A.2.3 Terminology	9A.2-1
9A.2.4 Acceptance Criteria	9A.2-3
9A.2.5 Systems Required to Achieve Safe Shutdown in the Event of Fire	9A.2-6
9A.2.6 Redundant Nonsafety Systems and Equipment	9A.2-6
9A.3 Analysis Approach	9A.3-1
9A.3.1 Review Data	9A.3-1
9A.3.2 Steam Tunnel Barrier Exception	9A.3-2
9A.3.3 Exceptions to Separation Criteria.	9A.3-2
9A.3.4 Exceptions to Penetration Requirements	9A.3-2
9A.3.5 Wall Deviations	9A.3-3
9A.3.6 Door Deviations	9A.3-3
9A.3.7 Basemats	9A.3-3
9A.3.8 Smoke Removal	9A.3-4
9A.4 Fire Hazard and Safe Shutdown Analysis Summary	9A.4-1
9A.4.1 Reactor Building	9A.4-1
9A.4.2 Fuel Building.	9A.4-3
9A.4.3 Control Building	9A.4-4
9A.4.4 Turbine Building	9A.4-5
9A.4.5 Radwaste Building	9A.4-7
9A.4.6 Electrical Building	9A.4-8
9A.4.7 Yard	9A.4-9
9A.4.8 Service Building.	9A.4-11
9A.4.9 Service Water/Water Treatment Building	9A.4-12
9A.5 Fire Protection Analyses by Room or Fire Zone	
9A.5.1 Reactor Building	9A.5-1
9A.5.2 Fuel Building.	9A.5-1
9A.5.3 Control Building	9A.5-2
9A.5.4 Turbine Building	9A.5-2
9A.5.5 Radwaste Building	9A.5-2
9A.5.6 Electrical Building	9A.5-2
9A.5.7 Yard	
9A.5.8 Service Building	9A.5-2

26A6642BB Rev. 01

ESBWR	Design Control Document/Tier 2
9A.5.9 Service Water/Water Treatment Building	9A.5-2
9A.6 Special Cases	9A.6-1
9A.6.1 Piping Penetrations, Reactor Building	9A.6-1
9A.6.2 Fire Door Deviations	9A.6-1
9A.6.3 Pipe Break Analyses	9A.6-1
9A.6.4 Fire Separation for Divisional Electrical Systems	9A.6-1
9A.6.5 Comparison to BTP SBLP 9.5-1 and Regulatory Guide	1.1899A.6-8
9A.6.6 Comparison to International Building Code	9A.6-12
9A 7 COL Information	9A 7-17

List of Tables

Table 9A.2-1 Fire Protection Codes and Standards

Table 9A.2-2 Systems Required to Achieve Safe Shutdown in the Event of Fire

Table 9A.5-1, Reactor Building

Table 9A.5-2, Fuel Building

Table 9A.5-3, Control Building

Table 9A.5-4, Turbine Building

Table 9A.5-5, Radwaste Building

Table 9A.5-6, Electrical Building

Table 9A.5-7, Yard

List of Illustrations

Figure 9A.2-1. Nuclear Island Fire Protection Zones ESBWR DCD EL -11500	
Figure 9A.2-2. Nuclear Island Fire Protection Zones ESBWR DCD EL -6400	
Figure 9A.2-3. Nuclear Island Fire Protection Zones ESBWR DCD EL -1000	
Figure 9A.2-4. Nuclear Island Fire Protection Zones ESBWR DCD EL 4650	
Figure 9A.2-5. Nuclear Island Fire Protection Zones ESBWR DCD EL 9060	
Figure 9A.2-6. Nuclear Island Fire Protection Zones ESBWR DCD EL 13570	
Figure 9A.2-7. Nuclear Island Fire Protection Zones ESBWR DCD EL 17500	
Figure 9A.2-8. Nuclear Island Fire Protection Zones ESBWR DCD EL 27000	
Figure 9A.2-9. Nuclear Island Fire Protection Zones ESBWR DCD EL 34000	
Figure 9A.2-10. Nuclear Island Fire Protection Zones ESBWR DCD Section "A-A"	,
Figure 9A.2-11. Nuclear Island Fire Protection Zones ESBWR DCD Section "B-B"	,
Figure 9A.2-12. Turbine Building Fire Protection Zones ESBWR DCD EL -1400	
Figure 9A.2-13. Turbine Building Fire Protection Zones ESBWR DCD EL 4650	
Figure 9A.2-14. Turbine Building Fire Protection Zones ESBWR DCD EL 12000	
Figure 9A.2-15. Turbine Building Fire Protection Zones ESBWR DCD EL 20000	
Figure 9A.2-16. Turbine Building Fire Protection Zones ESBWR DCD EL 28000	
Figure 9A.2-17. Turbine Building Fire Protection Zones ESBWR DCD EL (Variou	_
Figure 9A.2-18. Turbine Building Fire Protection Zones ESBWR DCD Section A-A	
Figure 9A.2-19. Turbine Building Fire Protection Zones ESBWR DCD Section B-F	}
Figure 9A.2-20. Radwaste Building Fire Protection Zones ESBWR DCD EL -9350	
Figure 9A.2-21. Radwaste Building Fire Protection Zones ESBWR DCD EL -2350	
Figure 9A.2-22. Radwaste Building Fire Protection Zones ESBWR DCD EL 4650	
Figure 9A.2-23. Radwaste Building Fire Protection Zones ESBWR DCD EL 10650	
Figure 9A.2-24. Radwaste Building Fire Protection Zones ESBWR DCD Section A	-A
Figure 9A.2-25. Electrical Building Fire Protection Zone ESBWR DCD EL 4650	
Figure 9A.2-26. Electrical Building Fire Protection Zone ESBWR DCD EL 9800	
Figure 9A.2-27. Electrical Building Fire Protection Zone ESBWR DCD EL 13000	
Figure 9A.2-28. Electrical Building Fire Protection Zone ESBWR DCD EL 18000	
Figure 9A.2-29. Electrical Building Fire Protection Zone ESBWR DCD EL 22000	
Figure 9A.2-30. Electrical Building Fire Protection Zone ESBWR DCD EL 27000	
Figure 9A.2-31. Electrical Building Fire Protection Zone ESBWR DCD EL (Variou	_
Figure 9A.2-32. Electrical Building Fire Protection Zone ESBWR DCD Section A-	A
Figure 9A.2-33. Site Fire Protection Zone ESBWR DCD Plot Plan	

<u>Term</u> <u>Definition</u>

10 CFR Title 10, Code of Federal Regulations

A/D Analog-to-Digital

AASHTO American Association of Highway and Transportation Officials

AB Auxiliary Boiler

ABS Auxiliary Boiler System

ABWR Advanced Boiling Water Reactor

ac / AC Alternating Current
AC Air Conditioning

ACF Automatic Control Function
ACI American Concrete Institute
ACS Atmospheric Control System
AD Administration Building

ADS Automatic Depressurization System

AEC Atomic Energy Commission
AFIP Automated Fixed In-Core Probe

AGMA American Gear Manufacturer's Association

AHS Auxiliary Heat Sink
AHU Air handling unit

AISC American Institute of Steel Construction

AISI American Iron and Steel Institute

AL Analytical Limit

ALARA As Low As Reasonably Achievable
ALWR Advanced Light Water Reactor
ANS American Nuclear Society

ANSI American National Standards Institute
AOO Anticipated Operational Occurrence

AOV Air Operated Valve

API American Petroleum Institute
APRM Average Power Range Monitor
APR Automatic Power Regulator

APRS Automatic Power Regulator System

ARI Alternate Rod Insertion

ARMS Area Radiation Monitoring System
ASA American Standards Association

ASD Adjustable Speed Drive

ASHRAE American Society of Heating, Refrigerating, and Air Conditioning Engineers

ASME American Society of Mechanical Engineers

Term Definition

AST Alternate Source Term

ASTM American Society of Testing Methods

AT Unit Auxiliary Transformer

ATLM Automated Thermal Limit Monitor
ATWS Anticipated Transients Without Scram

AV Allowable Value

AWS American Welding Society

AWWA American Water Works Association

B&PV Boiler and Pressure Vessel
BAF Bottom of Active Fuel
BHP Brake Horse Power
BOP Balance of Plant
BPU Bypass Unit

BPWS Banked Position Withdrawal Sequence

BRE Battery Room Exhaust

BRL Background Radiation Level

BTP NRC Branch Technical Position

BTU British Thermal Unit
BWR Boiling Water Reactor

BWROG Boiling Water Reactor Owners Group

CAV Cumulative absolute velocity
C&FS Condensate and Feedwater System

C&I Control and Instrumentation
C/C Cooling and Cleanup
CB Control Building

CBGAHVS Control Building General Area

CBHVAC Control Building HVAC

CBHVS Control Building Heating, Ventilation and Air Conditioning System

CCI Core-Concrete Interaction
CDF Core Damage Frequency
CFR Code of Federal Regulations
CIRC Circulating Water System
CIS Containment Inerting System
CIV Combined Intermediate Valve

CLAVS Clean Area Ventilation Subsystem of Reactor Building HVAC

CM Cold Machine Shop

CMS Containment Monitoring System
CMU Control Room Multiplexing Unit

Term Definition

COL Combined Operating License
COLR Core Operating Limits Report

CONAVS Controlled Area Ventilation Subsystem of Reactor Building HVAC

CPR Critical Power Ratio

CPS Condensate Purification System

CPU Central Processing Unit

CR Control Rod

CRD Control Rod Drive

CRDA Control Rod Drop Accident
CRDH Control Rod Drive Housing

CRDHS Control Rod Drive Hydraulic System

CRGT Control Rod Guide Tube

CRHA Control Room Habitability Area

CRHAHVS Control Room Habitability Area HVAC Sub-system

CRT Cathode Ray Tube

CS&TS Condensate Storage and Transfer System

CSDM Cold Shutdown Margin
CS / CST Condensate Storage Tank
CT Main Cooling Tower

CTVCF Constant Voltage Constant Frequency

CUF Cumulative usage factor
CWS Chilled Water System

D-RAP Design Reliability Assurance Program

DAC Design Acceptance Criteria

DAW Dry Active Waste
DBA Design Basis Accident

dc / DC Direct Current

DCS Drywell Cooling System

DCIS Distributed Control and Information System

DEPSS Drywell Equipment and Pipe Support Structure

DF Decontamination Factor

D/F Diaphragm Floor
DG Diesel-Generator
DHR Decay Heat Removal

DM&C Digital Measurement and Control

DOF Degree of freedom

DOI Dedicated Operators Interface
DOT Department of Transportation

Term	Definition
dPT	Differential Pressure Transmitter
DPS	Diverse Protection System
DPV	Depressurization Valve
DR&T	Design Review and Testing
DS	Independent Spent Fuel Storage Installation
DTM	Digital Trip Module
DW	Drywell
EB	Electrical Building
EBAS	Emergency Breathing Air System
EBHV	Electrical Building HVAC
ECCS	Emergency Core Cooling System
E-DCIS	Essential DCIS (Distributed Control and Information System)
EDO	Environmental Qualification Document
EFDS	Equipment and Floor Drainage System
EFPY	Effective full power years
EFU	Emergency Filter Unit
EHC	Electrohydraulic Control (Pressure Regulator)
ENS	Emergency Notification System
EOC	Emergency Operations Center
EOC	End of Cycle
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedures
EPDS	Electric Power Distribution System
EPG	Emergency Procedure Guidelines
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
ERICP	Emergency Rod Insertion Control Panel
ERIP	Emergency Rod Insertion Panel
ESF	Engineered Safety Feature
ETS	Emergency Trip System
FAC	Flow-Accelerated Corrosion
FAPCS	Fuel and Auxiliary Pools Cooling System
FATT	Fracture Appearance Transition Temperature
FB	Fuel Building
FBFPHV	Fuel Building Fuel Pool HVAC
FBGAHV	Fuel Building General Area HVAC
FBHV	Fuel Building HVAC
FCI	Fuel-Coolant Interaction

Term Definition

FCM File Control Module

FCS Flammability Control System

FCU Fan Cooling Unit

FDDI Fiber Distributed Data Interface

FFT Fast Fourier Transform

FFWTR Final Feedwater Temperature Reduction

FHA Fire Hazards Analysis
FIV Flow-Induced Vibration

FMCRD Fine Motion Control Rod Drive FMEA Failure Modes and Effects Analysis

FPS Fire Protection System

FO Diesel Fuel Oil Storage Tank FOAKE First-of-a-Kind Engineering

FPE Fire Pump Enclosure

FTDC Fault-Tolerant Digital Controller

FTS Fuel Transfer System

FW Feedwater

FWCS Feedwater Control System
FWS Fire Water Storage Tank
GCS Generator Cooling System
GDC General Design Criteria

GDCS Gravity-Driven Cooling System
GE General Electric Company

GE-NE GE Nuclear Energy
GEN Main Generator System

GETAB General Electric Thermal Analysis Basis

GL Generic Letter

GM Geiger-Mueller Counter
GM-B Beta-Sensitive GM Detector
GSIC Gamma-Sensitive Ion Chamber
GSOS Generator Sealing Oil System

GWSR Ganged Withdrawal Sequence Restriction

HAZ Heat-Affected Zone
HCU Hydraulic Control Unit
HCW High Conductivity Waste
HDVS Heater Drain and Vent System

HEI Heat Exchange Institute
HELB High Energy Line Break

<u>Term</u> <u>Definition</u>

HEP Human error probability

HEPA High Efficiency Particulate Air/Absolute

HFE Human Factors Engineering

HFF Hollow Fiber Filter

HGCS Hydrogen Gas Cooling System

HIC High Integrity Container
HID High Intensity Discharge
HIS Hydraulic Institute Standards
HM Hot Machine Shop & Storage

HP High Pressure

HPNSS High Pressure Nitrogen Supply System

HPT High-pressure turbine

HRA Human Reliability Assessment
HSI Human-System Interface

HSSS Hardware/Software System Specification HVAC Heating, Ventilation and Air Conditioning

HVS High Velocity Separator HWC Hydrogen Water Chemistry

HWCS Hydrogen Water Chemistry System

HWS Hot Water System HX Heat Exchanger

I&C Instrumentation and Control

I/O Input/Output

IAS Instrument Air System

IASCC Irradiation Assisted Stress Corrosion Cracking

IBC International Building Code

IC Ion Chamber

IC Isolation Condenser

ICD Interface Control DiagramICS Isolation Condenser SystemIE Inspection and Enforcement

IEB Inspection and Enforcement Bulletin
IED Instrument and Electrical Diagram

IEEE Institute of Electrical and Electronic Engineers

IFTS Inclined Fuel Transfer System

IGSCC Intergranular Stress Corrosion Cracking

IIS Iron Injection System
ILRT Integrated Leak Rate Test

Term	Definition
IOP	Integrated Operating Procedure
IMC	Induction Motor Controller
IMCC	Induction Motor Controller Cabinet
IRM	Intermediate Range Monitor
ISA	Instrument Society of America
ISI	In-Service Inspection
ISLT	In-Service Leak Test
ISM	Independent Support Motion
ISMA	Independent Support Motion Response Spectrum Analysis
ISO	International Standards Organization
ITA	Inspections, Tests or Analyses
ITAAC	Inspections, Tests, Analyses and Acceptance Criteria
ITA	Initial Test Program
LAPP	Loss of Alternate Preferred Power
LCO	Limiting Conditions for Operation
LCW	Low Conductivity Waste
LD	Logic Diagram
LDA	Lay down Area
LD&IS	Leak Detection and Isolation System
LERF	Large early release frequency
LFCV	Low Flow Control Valve
LHGR	Linear Heat Generation Rate
LLRT	Local Leak Rate Test
LMU	Local Multiplexer Unit
LO	Dirty/Clean Lube Oil Storage Tank
LOCA	Loss-of-Coolant-Accident
LOFW	Loss-of-feedwater
LOOP	Loss of Offsite Power
LOPP	Loss of Preferred Power
LP	Low Pressure
LPCI	Low Pressure Coolant Injection
LPCRD	Locking Piston Control Rod Drive
LPMS	Loose Parts Monitoring System
LPRM	Local Power Range Monitor
LPSP	Low Power Setpoint
LWMS	Liquid Waste Management System
MAAP	Modular Accident Analysis Program
MAPLHGR	Maximum Average Planar Linear Head Generation Rate

Term Definition

MAPRAT Maximum Average Planar Ratio

MBB Motor Built-In Brake
MCC Motor Control Center

MCES Main Condenser Evacuation System MCPR Minimum Critical Power Ratio

MCR Main Control Room

MCRP Main Control Room Panel
MELB Moderate Energy Line Break

MLHGR Maximum Linear Heat Generation Rate

MMI Man-Machine Interface

MMIS Man-Machine Interface Systems

MOV Motor-Operated Valve

MPC Maximum Permissible Concentration

MPL Master Parts List
MS Main Steam

MSIV Main Steam Isolation Valve

MSL Main Steamline

MSLB Main Steamline Break

MSLBA Main Steamline Break Accident
MSR Moisture Separator Reheater

MSV Mean Square Voltage
MT Main Transformer
MTTR Mean Time To Repair
MWS Makeup Water System
NBR Nuclear Boiler Rated
NBS Nuclear Boiler System

NCIG Nuclear Construction Issues Group

NDE Nondestructive Examination

NE-DCIS Non-Essential Distributed Control and Information System

NDRC National Defense Research Committee

NDT Nil Ductility Temperature

NFPA National Fire Protection Association

NIST National Institute of Standard Technology

NICWS Nuclear Island Chilled Water Subsystem

NMS Neutron Monitoring System
NOV Nitrogen Operated Valve
NPHS Normal Power Heat Sink
NPSH Net Positive Suction Head

PMCS

Global Abbreviations And Acronyms List

Term_	Definition
NRC	Nuclear Regulatory Commission
NRHX	Non-Regenerative Heat Exchanger
NS	Non-seismic
NSSS	Nuclear Steam Supply System
NT	Nitrogen Storage Tank
NTSP	Nominal Trip Setpoint
O&M	Operation and Maintenance
O-RAP	Operational Reliability Assurance Program
OBCV	Overboard Control Valve
OBE	Operating Basis Earthquake
OGS	Offgas System
OHLHS	Overhead Heavy Load Handling System
OIS	Oxygen Injection System
OLMCPR	Operating Limit Minimum Critical Power Ratio
OLU	Output Logic Unit
OOS	Out-of-service
ORNL	Oak Ridge National Laboratory
OSC	Operational Support Center
OSHA	Occupational Safety and Health Administration
OSI	Open Systems Interconnect
P&ID	Piping and Instrumentation Diagram
PA/PL	Page/Party-Line
PABX	Private Automatic Branch (Telephone) Exchange
PAM	Post Accident Monitoring
PAR	Passive Autocatalytic Recombiner
PAS	Plant Automation System
PASS	Post Accident Sampling Subsystem of Containment Monitoring System
PCC	Passive Containment Cooling
PCCS	Passive Containment Cooling System
PCT	Peak cladding temperature
PCV	Primary Containment Vessel
PFD	Process Flow Diagram
PGA	Peak Ground Acceleration
PGCS	Power Generation and Control Subsystem of Plant Automation System
PH	Pump House
PL	Parking Lot
PM	Preventive Maintenance

Performance Monitoring and Control Subsystem of NE-DCIS

<u>Term</u> <u>Definition</u>

PMF Probable Maximum Flood

PMP Probable Maximum Precipitation
PQCL Product Quality Check List

PRA Probabilistic Risk Assessment

PRMS Process Radiation Monitoring System
PRNM Power Range Neutron Monitoring

PS Plant Stack

PSD Power Spectra Density
PSS Process Sampling System
PSWS Plant Service Water System

PT Pressure Transmitter

PWR Pressurized Water Reactor

QA Quality Assurance

RACS Rod Action Control Subsystem

RAM Reliability, Availability and Maintainability

RAPI Rod Action and Position Information

RAT Reserve Auxiliary Transformer

RB Reactor Building
RBC Rod Brake Controller

RBCC Rod Brake Controller Cabinet

RBCWS Reactor Building Chilled Water Subsystem

RBHV Reactor Building HVAC
RBS Rod Block Setpoint

RBV Reactor Building Vibration

RC&IS Rod Control and Information System
RCC Remote Communication Cabinet

RCCV Reinforced Concrete Containment Vessel
RCCWS Reactor Component Cooling Water System

RCPB Reactor Coolant Pressure Boundary

RCS Reactor Coolant System
RDA Rod Drop Accident

RDC Resolver-to-Digital Converter

REPAVS Refueling and Pool Area Ventilation Subsystem of Fuel Building HVAC

RFP Reactor Feed Pump RG Regulatory Guide

RHR Residual heat removal (function)
RHX Regenerative Heat Exchanger

RMS Root Mean Square

Term Definition

RMS Radiation Monitoring Subsystem

RMU Remote Multiplexer Unit

RO Reverse Osmosis
ROM Read-only Memory

RPS Reactor Protection System
RPV Reactor Pressure Vessel

RRPS Reference Rod Pull Sequence

RSM Rod Server Module

RSPC Rod Server Processing Channel
RSS Remote Shutdown System
RSSM Reed Switch Sensor Module

RSW Reactor Shield Wall

RTIF Reactor Trip and Isolation Function(s)

RT_{NDT} Reference Temperature of Nil-Ductility Transition

RTP Reactor Thermal Power RW Radwaste Building

RWBCR Radwaste Building Control Room RWBGA Radwaste Building General Area

RWBHVAC Radwaste Building HVAC

RWCU/SDC Reactor Water Cleanup/Shutdown Cooling

RWE Rod Withdrawal Error RWM Rod Worth Minimizer

SA Severe Accident

SAR Safety Analysis Report

SB Service Building

S/C Digital Gamma-Sensitive GM Detector

SC Suppression Chamber S/D Scintillation Detector

S/DRSRO Single/Dual Rod Sequence Restriction Override

S/N Signal-to-NoiseS/P Suppression PoolSAS Service Air System

SB&PC Steam Bypass and Pressure Control System

SBO Station Blackout

SBWR Simplified Boiling Water Reactor SCEW System Component Evaluation Work

SCRRI Selected Control Rod Run-in

SDC Shutdown Cooling

Design Control Document/Tier 2

Global Abbreviations And Acronyms List

TermDefinitionSDMShutdown MarginSDSSystem Design Specification

SEOA Sealed Emergency Operating Area

SER Safety Evaluation Report SF Service Water Building

SFP Spent fuel pool

SIL Service Information Letter
SIT Structural Integrity Test
SIU Signal Interface Unit
SJAE Steam Jet Air Ejector
SLC Standby Liquid Control

SLCS Standby Liquid Control System

SLMCPR Safety Limit Minimum Critical Power Ratio

SMU SSLC Multiplexing Unit SOV Solenoid Operated Valve

SP Setpoint

SPC Suppression Pool Cooling

SPDS Safety Parameter Display System

SPTMS Suppression Pool Temperature Monitoring Subsystem of Containment Monitoring System

SR Surveillance Requirement SRM Source Range Monitor

SRNM Startup Range Neutron Monitor

SRO Senior Reactor Operator SRP Standard Review Plan

SRS Software Requirements Specification
SRSRO Single Rod Sequence Restriction Override

SRSS Sum of the squares SRV Safety Relief Valve

SRVDL Safety relief valve discharge line
SSAR Standard Safety Analysis Report
SSC(s) Structure, System and Component(s)

SSE Safe Shutdown Earthquake

SSLC Safety System Logic and Control SSPC Steel Structures Painting Council

ST Spare Transformer
STP Sewage Treatment Plant

STRAP Scram Time Recording and Analysis Panel

STRP Scram Time Recording Panel

TermDefinitionSVSafety ValveSWHStatic water head

SWMS Solid Waste Management System

SY Switch Yard

TAF Top of Active Fuel

TASS Turbine Auxiliary Steam System

TB Turbine Building

TBCE Turbine Building Compartment Exhaust

TEAS Turbine Building Air Supply
TBE Turbine Building Exhaust

TBLOE Turbine Building Lube Oil Area Exhaust

TBS Turbine Bypass System
TBHV Turbine Building HVAC
TBV Turbine Bypass Valve

TC Training Center

TCCWS Turbine Component Cooling Water System

TCS Turbine Control System
TCV Turbine Control Valve
TDH Total Developed Head

TEMA Tubular Exchanger Manufacturers' Association

TFSP Turbine first stage pressure

TG Turbine Generator

TGSS Turbine Gland Seal System
THA Time-history accelerograph
TLOS Turbine Lubricating Oil System

TLU Trip Logic Unit
TMI Three Mile Island

TMSS Turbine Main Steam System
TRM Technical Requirements Manual

TS Technical Specification(s)
TSC Technical Support Center

TSI Turbine Supervisory Instrument

TSV Turbine Stop Valve
UBC Uniform Building Code
UHS Ultimate heat sink

UL Underwriter's Laboratories Inc.
UPS Uninterruptible Power Supply

USE Upper Shelf Energy

ZPA

Global Abbreviations And Acronyms List

<u>Term</u>	Definition
USM	Uniform Support Motion
USMA	Uniform support motion response spectrum analysis
USNRC	United States Nuclear Regulatory Commission
USS	United States Standard
UV	Ultraviolet
V&V	Verification and Validation
Vac / VAC	Volts Alternating Current
Vdc / VDC	Volts Direct Current
VDU	Video Display Unit
VW	Vent Wall
VWO	Valves Wide Open
WD	Wash Down Bays
WH	Warehouse
WS	Water Storage
WT	Water Treatment
WW	Wetwell
XMFR	Transformer

Zero period acceleration

9A. FIRE HAZARDS ANALYSIS

9A.1 INTRODUCTION

This fire hazards analysis (FHA) establishes and evaluates distinct fire areas for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, Yard, Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, and Administration Building. Plan and elevation view drawings of the buildings as listed in Table 9A.2-3 are utilized to depict the resulting fire area boundaries, fire barriers, and fire suppression systems. Fire areas containing safe shutdown equipment are identified and evaluated to confirm that a sufficient number of safety-related safe shutdown systems remain available during and following a design basis fire to achieve hot shutdown and maintain safe shutdown.

All materials capable of supporting combustion in each of the designated fire areas are identified and quantified in Tables 9A.5-1 through 9A.5-7. In addition, the fire protection features available for each room or fire area are identified in Tables 9A.5-1 through 9A.5-7.

The primary requirement of a nuclear facility is to operate and shutdown without undue risk to the health and safety of the public. In the event of a design basis fire, this requirement means that the ESBWR plant shall be capable of safely shutting down and maintaining a safe shutdown condition, while not posing a hazard to the public or operating personnel, and that recovery from the fire shall be capable of being accomplished safely.

This FHA identifies and evaluates the hazard of fires relative to maintaining the safe shutdown capability of the plant. This FHA does not evaluate the overall fire protection program for an ESBWR, since many of an effective program's elements are administrative or procedural in nature, but rather assumes that an ESBWR Owner will have an effective fire protection program in place. As described in Regulatory Guide 1.189, the primary objectives of a fire protection program at a nuclear plant are to minimize both the probability of occurrence and the consequences of fire. To meet these objectives, the fire protection program shall be designed to provide reasonable assurance, through defense in depth, that a fire will not prevent the performance of necessary safe shutdown functions and that radioactive releases to the environment in the event of a fire will be minimized.

9A.2 ANALYSIS CRITERIA

9A.2.1 Codes and Standards

The Table 9A.2-1 applicable codes and standards are incorporated into the design of the ESBWR Standard Plant, including the fire detection and suppression systems designs, to the maximum extent practicable. These codes and standards may differ slightly from those listed in NRC Branch Technical Position SPLB 9.5-1 in order to reflect the applicable code titles specified in the 2004 National Fire Code by the NFPA. Tables 1.9-21, 1.9-22, and 1.9-23 identify the relevant edition for each applicable code and standard.

9A.2.2 Fire Area Separation and Fire Equipment Drawings

Drawings showing the fire area separation and fire protection for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, and Yard are identified in the List of Illustrations.

Drawings showing the fire area separation and fire protection within the Yard buildings (such as within the Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, and Administration Building) will be added later when detailed arrangements within those buildings are available.

The fire protection water supplies and mains are shown schematically in Figure 9.5-1.

9A.2.3 Terminology

Fire Area – that portion (aggregate floor area) of a building or plant enclosed and bounded by fire walls, fire barriers, exterior walls, fire-resistance rated horizontal assemblies of a building, or other means in order to contain fire within that area.

Fire Barrier – a continuous vertical or horizontal fire-resistance rated construction assembly designed and constructed to limit the spread of heat and fire and to restrict the movement of smoke. Rated fire barriers are those fire barriers (e.g., walls, floors, ceilings, and their supports, including beams, joists, columns, penetration seals or closures, fire doors and fire dampers) that are rated, or capable of being rated, by approving laboratories in hours of resistance to fire and are used to prevent the spread of potential fire. Fire barriers that define the boundaries of a fire area should have a fire-resistance rating of at least 3 hours. All openings (doors, windows, penetrations, ductwork, etc) through fire barriers should be properly protected, sealed, and qualified by fire endurance testing to a fire resistance rating as required by the applicable codes, up to the same fire resistance rating of the fire barrier itself.

Fire Suppression - control and extinguishing of fires. Manual fire suppression includes the use of hoses, portable extinguishers, or fixed systems by plant personnel. Automatic fire suppression is the use of automatically actuated, fixed systems such as water (systems) sprinkler systems or low-pressure carbon dioxide system.

Fire Wall – a fire-resistance rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient

structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

Fire Zones - subdivisions of a fire area based on the fire hazards analysis that demonstrate that the fire protection systems and features within the fire zones provide an appropriate level of protection for the associated hazards.

Noncombustible Materials - materials having any one of the following characteristics:

- Materials no part of which can ignite and burn, support combustion, or release flammable vapors when subjected to a fire or heat; this includes wet resin in tanks or other similar potentially combustible materials that are continuously immersed in water are not considered a viable combustible for exposure fires due to the significant amount of heating that would be required to dry out the material before combustion could occur;
- Materials having a structural base of non-combustible material, as defined in the above item, with a surfacing not over 1/8 inch thick which has a flame spread rating not higher than 50 when measured using ASTM E84; or
- Materials, other than as described in the above two items, having a surface flame spread
 rating not higher than 25 without evidence of continued progressive combustion and of
 such composition that surfaces that would be exposed by cutting through the material in
 any way would not have flame spread rating higher than 25 without evidence of
 continued progressive combustion.

The flame-spread ratings referred to above are obtained according to NFPA 255.

Nuclear Safety-Related Structures, Systems and Components - are as defined in 10 CFR 50.2.

Sprinkler System - a network of piping connected to a reliable water supply to distribute the water throughout the area protected and discharges the water through sprinklers in sufficient quantity either to extinguish the fire entirely or to prevent its spread. The system, usually activated by heat, includes a controlling valve and a device for actuating an alarm when the system is in operation. The following categories of sprinkler systems are defined in NFPA 13:

- Wet-pipe System
- Dry-pipe System
- Preaction System
- Deluge System
- Combined Dry-pipe and Preaction System
- On-Off System

Standpipe and Hose Systems - fixed piping systems with hose outlets, hoses, and nozzles connected to a reliable water supply to provide effective fire hose streams to specific areas inside of the buildings.

Water Spray System - a special fixed pipe system connected to a reliable source of fire protection water supply and equipped with open-head spray nozzles for specific water discharge and distribution over surface or area to be protected. The piping system is connected to the water supply through an automatic or manually actuated valve to initiate the flow of water.

Wet Standpipe System - the ESBWR design utilizes a Class III wet standpipe system as defined by NFPA 14. The Class III wet standpipe system has been modified to provide connections for permanently installed 1.5-inch fire hoses, but also provides 2.5-inch and 1.5-inch hose connections made through one 2.5-inch hose valve and removable 2.5 by 1.5-inch reducer.

9A.2.4 Acceptance Criteria

The following basic guidelines have been used as criteria for the fire hazard analysis, to be conducted in accordance with Regulatory Guide 1.189 and NFPA 804:

- (1) The analysis is based on the existing design and on the currently specified, but not yet purchased, equipment. The analysis provides a basis for evaluating the fire protection characteristics and features of equipment as it is purchased.
- (2) Automatic sprinkler systems are provided in the ESBWR design for areas in which either installed combustible loading is large enough to warrant the installation or a significant transient combustible loading is most likely to occur as a result of combustibles introduced by normal maintenance operations. The fire hazard analysis is based on the introduction of transient combustibles to any area of the plant, subject to administrative controls. Control of combustible transient materials is assumed to comply with Regulatory Guide 1.39 for housekeeping requirements.

As described in Appendix 9B, the combustible loading limit for electrical areas has been conservatively determined as 1400 MJ/m² and the combustible loading limit for all other indoor areas has been conservatively determined as 700 MJ/m²; rooms that exceed these limits require automatic fire suppression. This approach conservatively assumes that all combustible material within a fire area instantaneously releases its net heat content upon ignition of the fire. Due to the considerable separation and fire barriers provided in the ESBWR plant layout, a detailed analysis or modeling of fire damage and plume temperatures resulting from any given fire was not considered necessary and has not been performed. This type of analysis could be performed later for an individual fire area if needed, but then could also include consideration of room height and volume, spatial location of combustibles and equipment, incomplete combustion, time-weighted heat release rates, thermal inertia of the structure, ventilation effects, response of installed automatic fire detection, response of installed fire suppression, and other relevant factors.

- (3) The buildings are generally of reinforced concrete construction. The walls, floors, and ceilings have 3-hour fire resistance ratings where required based on high combustible loadings (lubrication oil tank, for example) in the room or where an adjacent room contains equipment or systems from a different safety-related division. Corridors and stairwells that do not communicate between areas of different safety-related divisions may have walls and doors with a 2-hour minimum fire rating for personnel protection during egress from the areas. Non-concrete interior walls are constructed of metal studs and gypsum wallboard to the required fire resistance rating.
- (4) Doors penetrating rated fire barriers comply with NFPA ratings for that barrier. There are also doors that provide fire area separation that may not be labeled fire doors but do provide equivalent protection. Typically these are the doors for the personnel air lock into the reactor containment and the missile/tornado doors at the equipment access entrance to

the reactor building. The term "doors," where used in the analysis shall mean doors, frames, and hardware.

The use of 1.5-hour fire rated elevator doors in 3-hour fire-rated barriers does not compromise the fire barrier. Rather, section 6-1.2.2 of NFPA 804-1995 specifically allows 1.5-hour fire-rated doors in elevator shafts. No other applicable codes (IBC, NFPA 80, NFPA 101, NFPA 252, or ASME A17.1) require elevator doors to have a fire rating of more than 1.5 hours. None of the applicable codes address 3-hour fire-rated elevator shafts. It is not unusual for a door in a fire-rated wall to have a lower fire rating than the applicable fire wall, because the area on both sides of the door will normally be kept free of combustible material to ensure use of the door. Personnel evacuating from a fire are warned by signage at each elevator to use stairs (protected by 3-hour firewalls and doors) and not elevators during a fire.

- (5) The fireproofing of structural steel members, where required by calculation based on combustible loading, is accomplished by application of an UL-listed or FM-approved cementitious or ablative material, or by an UL-listed or FM-approved boxing design. The required fire rating determines the fireproofing material thickness. Gypsum board is utilized for protection of fireproofing in high traffic or office areas.
- (6) Surface finishes are specified to have a flame spread, fuel-contributed, and smoke-evolved index of 25 or less (Class A), determined by ASTM E84 (NFPA 255).
- (7) The use of plastic materials, including electrical cable insulation, is minimized in the ESBWR design.
- (8) Suspended ceilings are used in some areas of the plant. The ceilings, including the lighting fixtures, are of noncombustible construction.
- (9) The electrical cable fire-stops are tested to demonstrate a fire rating equal to the rating of the barrier they penetrate. As a minimum the penetrations meet the requirements of NUREG-1552, including Supplement 1. The tests are performed or witnessed by a representative of a qualified, independent testing laboratory. The documented test results for the acceptable fire-stops are made a part of the plant design records.
- (10) Electrical cable insulation in either solid metal enclosed raceways or concrete duct banks does not represent a combustible fire load and is excluded from the combustible loading analysis.
- (11) Control, power, or instrument cables and equipment of redundant systems used for bringing the reactor to hot shutdown and maintaining safe shutdown, are separated from each other by 3-hour rated fire barriers, except within the containment and where the equipment of more than one division is required to be located within a single fire area. Where multiple divisions of cable or equipment are located in the same fire area, the acceptability of the configuration is evaluated in Section 9A.6.
- (12) Certain areas of the plant have cable trays in stacked array. Where stacking of trays occurs, power cable, which is the most susceptible to internally generated fires, is routed in the uppermost tray to the greatest extent possible to provide isolation from other trays in the stack.

The fire loading of electrical cable in trays is based on flame-retardant, cross-linked polyethylene insulation having a maximum calorific value of 29.8 MJ/kg (12,834 Btu/lbm).

The cable trays are assumed to have the maximum (40%) design fill; actual cable fills may be lower.

The analysis uses 48.8 kilograms of insulation per square meter (10 lbm/ft²) of tray. The combustible loading is based on maximum loading. As cables drop out of (exit) trays, the fire loading decreases. Cable insulation in completely enclosed (i.e., solid-bottom and solid-cover) trays or steel conduits is not considered to be a contributory, exposed combustible fire load to the area

- (13) Cables for local indication are included in the safe shutdown analysis where failure of the cable could cause failure of functionally associated circuits or where required to provide either diagnostic or process parameter information for recovery.
- (14) Total reliance on a single fire suppression method is not used. At least two fire suppression methods are available to suppress a fire in each fire area. The plant design provides the following types of suppression methods and utilizes them in suitable combination for the fire hazard considered:
 - a. Automatic wet-pipe sprinkler system;
 - b. Automatic preaction sprinkler system;
 - c. Automatic dry-pipe sprinkler system;
 - d. Automatic preaction foam water sprinkler system;
 - e. Automatic foam water deluge system;
 - f. Automatic dry-pilot deluge system;
 - g. Internal manual water spray system;
 - h. Internal low pressure carbon dioxide flooding system;
 - i. Standpipe and hose racks;
 - j. Portable class ABC fire extinguishers;
 - k. Portable carbon dioxide class BC fire extinguishers;
 - 1. Portable class D fire extinguishers.
- (15) The design of the water supply system ensures delivery of water to the standpipe and hose rack systems concurrent with a single active failure. The standpipe system and one diesel driven fire pump, its water supply, its suction piping, and its discharge piping throughout the Reactor, Fuel, and Control Buildings are designed to remain functional following an SSE. The standpipes which supply fire water to hose stations covering safety-related equipment are contained within the concrete stairwells or dedicated concrete chases, and thus, are protected from other phenomena of less severity and greater frequency.
- (16) The effect of pipe breaks in fire suppression systems and protection methods for the effect of pipe breaks meet the criteria specified in Section 3.4 and Subsection 9.5.1.

- (17) The floor drains are sized to handle both leakage from a crack in the standpipes or simultaneous operation of two fire hose streams. See Subsection 9.3.3 for details of the plant drainage system.
- (18) Piping and cable tray penetrations are provided with fire-stops when penetrating fire rated barriers.
- (19) HVAC penetrations through 2-hour or 3-hour rated fire barriers are provided with fire dampers compatible with the rating of the fire barrier.

9A.2.5 Systems Required to Achieve Safe Shutdown in the Event of Fire

In case of a design basis fire, certain systems may be required when the Nuclear Steam Supply System (NSSS) is isolated from the main condenser during shutdown or accident conditions.

The main steam lines and feedwater lines provide the core-cooling path to and from the main condenser during normal operation at power or during startup or shutdown transients when the reactor is not isolated.

The safe shutdown functions are accomplished through interaction of various passive safety-related systems. The safe shutdown systems provide one or more of the following functions:

- Maintenance of reactor vessel water level:
- Pressure control and/or depressurization of the reactor pressure vessel;
- Heat removal;
- Heat sink;
- DC electrical power; and
- Indication and control.

Table 9A.2-2 shows the systems that provide one or more of the safe shutdown functions in the case of fire. The table includes the operating mode or modes for each system, the functions performed, reactor conditions that require system operation, the divisional assignment, the backup system, and Tier 2 references for system description.

A sufficient number of safety-related safe shutdown systems remain available during and following a design basis fire to achieve hot shutdown and maintain safe shutdown.

9A.2.6 Redundant Nonsafety Systems and Equipment

In case of a design basis fire, no nonsafety-related systems are required to achieve hot shutdown and maintain safe shutdown. Nonetheless, certain nonsafety-related systems and equipment include redundancy to provide operational flexibility and robustness. In general terms, the redundant components within a nonsafety-related system are referred to as Train A and Train B (and in some cases, Train C). To maintain the redundancy and robustness for these, fire-rated separation is provided between the redundant Train A and Train B (and Train C, where applicable) components for these certain nonsafety-related systems.

The initial design of the ESBWR has included redundancy within the following nonsafety-related systems:

- Reactor Water Cleanup / Shutdown Cooling System;
- Reactor Component Cooling Water System;
- Plant Service Water System
- Fuel and Auxiliary Pool Cooling System;
- RB and CB sumps in the Equipment and Floor Drains System;
- RB HVAC System;
- FB HVAC System;
- CB HVAC System;
- Non-IE DCS System;
- Instrument Air System;
- Chilled Water System;
- Seismic category I firepumps within the Fire Protection System;
- Off-site power supplies (transformers);
- On-site power supplies (diesel-generators and auxiliary equipment);
- Electrical power distribution to all of the above.

Table 9A.2-1

Fire Protection Codes and Standards

Refer to Tables 1.9-21, 1.9-22, and 1.9-23 for applicable editions.

28 CFR 36	Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities			
29 CFR 1910	Occupational Safety and Health Standards			
29 CFR 1926	Safety and Health Regulations for Construction			
10 CFR 50	Licensing of Production/Utilization Facilities			
UL Directory	Fire Protection Equipment Directory			
FM	Factory Mutual Approval Guide			
ANI Manual	Basic Fire Protection for Nuclear Power Plants			
NFPA 10	Standard for Portable Fire Extinguishers			
NFPA 11	Standard for Low-, -Medium, and -High-Expansion Foam Systems			
NFPA 12	Standard on Carbon Dioxide Extinguishing Systems			
NFPA 13	Standard for the Installation of Sprinkler Systems			
NFPA 14	Standard for the Installation of Standpipe and Hose Systems			
NFPA 15	Standard for Water Spray Fixed Systems for Fire Protection			
NFPA 16	Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems			
NFPA 20	Standard for the Installation of Stationary Pumps for Fire Protection			
NFPA 22	Standard for Water Tanks for Private Fire Protection			
NFPA 24	Standard for the Installation of Private Fire Service Mains and their Appurtenances			
NFPA 30	Flammable and Combustible Liquids Code			
NFPA 37	Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines			
NFPA 50A	Standard for Gaseous Hydrogen Systems at Consumer Sites			

Table 9A.2-1

Fire Protection Codes and Standards

Refer to Tables 1.9-21, 1.9-22, and 1.9-23 for applicable editions.

NFPA 70	National Electrical Code
NFPA 72	National Fire Alarm Code
NFPA 75	Standard for the Protection of Information Technology Equipment
NFPA 80	Standard for Fire Doors and Windows
NFPA 80A	Recommended Practice for Protection of Buildings from Exterior Fire Exposures
NFPA 90A	Standard for the Installation of Air-Conditioning and Ventilating Systems
NFPA 92A	Recommended Practice for Smoke-Control Systems
NFPA 101	Life Safety Code
NFPA 204	Standard for Smoke and Heat Venting
NFPA 251	Standard Methods of Tests of Fire Endurance of Building Construction and Materials
NFPA 252	Standard Methods of Fire Tests of Door Assemblies
NFPA 255	Standard Method of Test of Surface Burning Characteristics of Building Materials
NFPA 497	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
NFPA 780	Standard for the Installation of Lightning Protection Systems
NFPA 804	Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants
NFPA 1961	Standard on Fire Hose
NFPA 1963	Standard for Fire Hose Connections
NFPA 1964	Standard for Spray Nozzles
ASHRAE 15	Safety Standard for Refrigeration Systems
ASME A17.1	Safety Code for Elevators and Escalators

Table 9A.2-1

Fire Protection Codes and Standards

Refer to Tables 1.9-21, 1.9-22, and 1.9-23 for applicable editions.

ASTM E84	Standard Test Method for Fire Tests of Building Materials			
IBC	International Building Code			
IFC	International Fire Code			
IEEE 383	Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations			
IEEE 384	Standard Criteria for Independence of Class 1E Equipment and Circuits			
IEEE 603	Standard Criteria for Safety Systems for Nuclear Power Generating Stations			
Regulatory Guide 1.39	Housekeeping Requirements for Water-Cooled Nuclear Power Plants			
Regulatory Guide 1.75	Physical Independence of Electric Systems			
Regulatory Guide 1.189	Fire Protection for Operating Nuclear Power Plants			
NUREG-0800, Section 9.5.1	Fire Protection Program			
NUREG-1552	Fire Barrier Penetration Seals in Nuclear Power Plants			

Table 9A.2-2
Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function	Reactor Condition	Division	Backup System	Tier 2 Ref.	Remarks
ICS A	1/2/3/4	Isolation	I	ICS B ICS C ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS B	1/2/3/4	Isolation	II	ICS A ICS C ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS C	1/2/3/4	Isolation	III	ICS A ICS B ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS D	1/2/3/4	Isolation	IV	ICS A ICS B ICS C	5.4.6	Closed loop to and from reactor vessel.
GDCS A	1	Depressurized	I	GDCS B GDCS C GDCS D	6.3.2	
GDCS B	1	Depressurized	II	GDCS A GDCS C GDCS D	6.3.2	
GDCS C	1	Depressurized	III	GDCS A GDCS B GDCS D	6.3.2	
GDCS D	1	Depressurized	IV	GDCS A GDCS B GDCS C	6.3.2	

Table 9A.2-2
Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function	Reactor Condition	Division	Backup System	Tier 2 Ref.	Remarks
ADS A	2	Isolated	I	ADS B, C, D ICS B, C, D	6.3.3	
ADS B	2	Isolated	II	ADS A, C, D ICS A, C, D	6.3.3	
ADS C	2	Isolated	III	ADS A, B, D ICS A, B, D	6.3.3	
ADS D	2	Isolated	IV	ADS A, B, C ICS A, B, C	6.3.3	
PCCS A	3/4	Post Depressurization	_	PCCS B, C, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS B	3/4	Post Depressurization		PCCS A, C, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS C	3/4	Post Depressurization	_	PCCS A, B, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS D	3/4	Post Depressurization		PCCS A, B, C, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS E	3/4	Post Depressurization		PCCS A, B, C, D, F	6.2.2	Closed piping connections to GDCS and suppression pools.

Table 9A.2-2
Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function	Reactor Condition	Division	Backup System	Tier 2 Ref.	Remarks
PCCS F	3/4	Post Depressurization		PCCS A, B, C, D, E	6.2.2	Closed piping connections to GDCS and suppression pools.
Div I instrument power & signals	5/6/7	All	I	Division II, III, and/or IV	7.2, 7.3	
Div II instrument power & signals	5/6/7	All		Division I, III, and/or IV		
Div III instrument power & signals	5/6/7	All	III	Division I, II, and/or IV	7.2, 7.3	
Div IV instrument power & signals	5/6/7	All	IV	Division I, II, and/or III	7.2, 7.3	

Functions:

- 1 maintain reactor water level
- 2 depressurize the reactor vessel
- 3 heat removal
- 4 heat sink
- 5 electrical power
- 6 control (includes logic systems power for initiation of RPS and safe shutdown systems)
- 7 monitoring/indication

26A6642BB Rev. 01

ESBWR
Design Control Document/Tier 2

Figure 9A.2-2. Nuclear Island Fire Protection Zones ESBWR DCD EL -6400

26A6642BB Rev. 01

Design Control Document/Tier 2

ESBWR

Figure 9A.2-3. Nuclear Island Fire Protection Zones ESBWR DCD EL -1000

ESBWR
Design Control Document/Tier 2

Figure 9A.2-4. Nuclear Island Fire Protection Zones ESBWR DCD EL 4650

Design Control Document/Tier 2

ESBWR

Figure 9A.2-5. Nuclear Island Fire Protection Zones ESBWR DCD EL 9060

ESBWR

Design Control Document/Tier 2

Figure 9A.2-6. Nuclear Island Fire Protection Zones ESBWR DCD EL 13570

ESBWR
Design Control Document/Tier 2

Figure 9A.2-7. Nuclear Island Fire Protection Zones ESBWR DCD EL 17500

Design Control Document/Tier 2

ESBWR

Figure 9A.2-8. Nuclear Island Fire Protection Zones ESBWR DCD EL 27000

Design Control Document/Tier 2

Figure 9A.2-9. Nuclear Island Fire Protection Zones ESBWR DCD EL 34000

ESBWR

Design Control Document/Tier 2

Figure 9A.2-10. Nuclear Island Fire Protection Zones ESBWR DCD Section "A-A"

Design Control Document/Tier 2

ESBWR

Figure 9A.2-11. Nuclear Island Fire Protection Zones ESBWR DCD Section "B-B"

Design Control Document/Tier 2

Figure 9A.2-12. Turbine Building Fire Protection Zones ESBWR DCD EL -1400

ESBWR
Design Control Document/Tier 2

Figure 9A.2-13. Turbine Building Fire Protection Zones ESBWR DCD EL 4650

ESBWR
Design Control Document/Tier 2

Figure 9A.2-14. Turbine Building Fire Protection Zones ESBWR DCD EL 12000

ESBWR

Design Control Document/Tier 2

Figure 9A.2-15. Turbine Building Fire Protection Zones ESBWR DCD EL 20000

Design Control Document/Tier 2

ESBWR

Figure 9A.2-16. Turbine Building Fire Protection Zones ESBWR DCD EL 28000

ESBWR
Design Control Document/Tier 2

Figure 9A.2-17. Turbine Building Fire Protection Zones ESBWR DCD EL (Various)

ESBWR

Design Control Document/Tier 2

Figure 9A.2-18. Turbine Building Fire Protection Zones ESBWR DCD Section A-A

ESBWR

Design Control Document/Tier 2

Figure 9A.2-19. Turbine Building Fire Protection Zones ESBWR DCD Section B-B

ESBWR

Design Control Document/Tier 2

Figure 9A.2-20. Radwaste Building Fire Protection Zones ESBWR DCD EL -9350

Design Control Document/Tier 2

ESBWR ESBWR

Figure 9A.2-21. Radwaste Building Fire Protection Zones ESBWR DCD EL -2350

Design Control Document/Tier 2

ESBWR

Figure 9A.2-22. Radwaste Building Fire Protection Zones ESBWR DCD EL 4650

ESBWR

Design Control Document/Tier 2

Figure 9A.2-23. Radwaste Building Fire Protection Zones ESBWR DCD EL 10650

ESBWR

Design Control Document/Tier 2

Figure 9A.2-24. Radwaste Building Fire Protection Zones ESBWR DCD Section A-A

Design Control Document/Tier 2

ESBWR

Figure 9A.2-25. Electrical Building Fire Protection Zone ESBWR DCD EL 4650

ESBWR

Design Control Document/Tier 2

Figure 9A.2-26. Electrical Building Fire Protection Zone ESBWR DCD EL 9800

ESBWR

Design Control Document/Tier 2

Figure 9A.2-27. Electrical Building Fire Protection Zone ESBWR DCD EL 13000

Design Control Document/Tier 2

ESBWR ESBWR

Figure 9A.2-28. Electrical Building Fire Protection Zone ESBWR DCD EL 18000

ESBWR

Design Control Document/Tier 2

Figure 9A.2-29. Electrical Building Fire Protection Zone ESBWR DCD EL 22000

Design Control Document/Tier 2

ESBWR

Figure 9A.2-30. Electrical Building Fire Protection Zone ESBWR DCD EL 27000

ESBWR
Design Control Document/Tier 2

Figure 9A.2-31. Electrical Building Fire Protection Zone ESBWR DCD EL (Various)

ESBWR
Design Control Document/Tier 2

Figure 9A.2-32. Electrical Building Fire Protection Zone ESBWR DCD Section A-A

ESBWR

Design Control Document/Tier 2

Figure 9A.2-33. Site Fire Protection Zone ESBWR DCD Plot Plan

9A.3 ANALYSIS APPROACH

9A.3.1 Review Data

The fire hazards analysis is based on a review of every fire area, using the defense in depth approach from NFPA 804 and Regulatory Guide 1.189. Defense in depth is defined as a principle aimed at providing a high degree of fire protection by inclusion of these three concepts:

1) preventing potential fires from starting; 2) quickly detecting those fires that occur, and promptly controlling and extinguishing fires to limit damage; and, 3) providing structural protection (such as fire-rated barriers) for buildings, equipment, and circuits so that a fire that is not promptly extinguished will not prevent safe shutdown, cause loss of life, or result in radioactive release in excess of 10 CFR 20 limits. None of the defense in depth concepts is complete by itself.

The analysis is based on a review of every room for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, and Yard, as well as the overall design acceptance criteria for the Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, and Administration Building. The following data has been gathered for each fire area or room reviewed:

- (1) Identification for the safety-related equipment within each fire area. Non safety-related equipment is not required for safe shutdown;
- (2) Identification of fire areas containing radioactive material that could be released to the exclusion area or beyond should a fire occur in that area;
- (3) Definition of the rated fire barriers surrounding a specific room or rooms that allow classifying the room or rooms as a separate fire area. Non-rated barriers for which an equivalency to a fire barrier is claimed are also identified;
- (4) A specific listing of types, quantities and characteristics of significant combustibles within a fire area that could constitute a combustible load;
- (5) Quantitative listing of fire loadings that represent the combustibles identified for each fire area;
- (6) Listing of all the fire detection and suppression capabilities provided and their accessibility for each room. Note that fire detection will also be installed within HVAC ductwork as required by NFPA 90A but is not credited in the fire hazards analysis for early detection of any fire within a single fire area;
- (7) An analysis of each fire area identifying the design criteria employed in providing fire protection for the equipment within the fire area. Safety-related equipment is separated on a divisional basis by 3-hour rated fire barriers, except equipment mounted in the control room or containment, as well as for equipment covered by special cases that are discussed in Section 9A.6 (for more information on safety-related equipment fire separation and safe shutdown, see Subsection 9.5.1). Fire detection, fire suppression, and fire stop capabilities are also discussed in the analysis;

- (8) An analysis defining the worst-case consequences of the fire for each fire area. This is stated as loss of safe shutdown function and identifies the divisional backup capability available for safety-related systems;
- (9) An analysis of each fire area addressing the consequences of fire, if the fire protection system functions as designed. The fire protection system is defined as having the capability to detect, contain, and extinguish the fire. The ability to restrict the fire to a discrete area, the result of the introduction of water to the fire area, and the capability of extinguishing the fire by various means of suppression are stated. See Section 3.4, for a discussion of pipe break consequences;
- (10) Design provisions for protecting the functional capability of safety-related systems and associated cabling from the results of inadvertent operation, careless operation, or rupture of the extinguishing systems in each fire area are stated;
- (11) The means of containing or inhibiting the progress of a fire in each fire area (defined as the use of a fire-resisting enclosure or barrier, fire-stops at wall penetrations, ventilation fire dampers, curbs, or fire doors into the area); and
- (12) Room numbers are shown on the analysis pages that conform to those shown on the fire zone drawings.

9A.3.2 Steam Tunnel Barrier Exception

The steam tunnel in the Reactor Building opens into the Turbine Building without a barrier wall to allow venting of steam to the Turbine Building in the event of a major steam line leak in the steam tunnel within the Reactor Building. There are no openings in the steam tunnel that are not protected by either fire dampers or doors, including the walls, floors, and ceilings. An automatic, open-head water spray system is provided to serve as a water curtain fire barrier between the Turbine Building and Reactor Building portions of the steam tunnel.

9A.3.3 Exceptions to Separation Criteria

A specific analysis is prepared for each fire area in the containment and Main Control Room that contains redundant systems of safety-related equipment or electrical cables. This analysis confirms that adequate protection has been provided by means of separation by distance, physical barriers, electrical isolation, electrical circuit characteristics, or adequate backup systems. The analyses are in Section 9A.6, Special Cases.

9A.3.4 Exceptions to Penetration Requirements

The Drywell Inerting System supply ductwork (piping) for the wetwell and the drywell passes through a fire barrier but does not have fire dampers. These consist of two supply lines (each 350 mm (14 in.) nominal diameter) and two exhaust lines (one 350 mm (14 in.) nominal diameter and one 400 mm (16 in.) nominal diameter). There are two containment isolation valves for each supply and exhaust piping penetration. The isolation valves are normally closed except during plant outage periods, when smoke removal could be accomplished without interruption if a fire occurs.

9A.3.5 Wall Deviations

The wall descriptions below represent anticipated deviations from tested and approved 3-hr, fire-resistive assemblies. The designs were previously submitted and approved in the GESSAR II SSAR.

The Type 1 wall design exceeds the design of the tested and approved assembly from which it was adapted. The Type 2 assembly requires a UL test.

Type 1 wall—The Type 1 wall is designed with 0.15-meter (6-in) metal studs at 0.30-meter (12-in) on center (seismic design) with three layers of 0.016-meter (5/8-in) fire code gypsum board on each side of the studs. The design is adapted from ICBO 1495 for a 3-hour partition. The only deviation from the standard is that the gage thickness of the structural members has been increased to meet higher seismic requirements.

Type 2 wall—The Type 2 wall is a variation of Type 1 with 0.15-meter (6-in) metal studs at 0.30-meter (12-in) on center between 0.15-meter (6-in) steel, wide-flange columns at 1.22-meter (4-ft) on center. Three layers of 0.016-meter (5/8-in) fire code gypsum board line one side while 0.013-meter (1/2-in) thick steel plate for bullet resistance and two layers of 0.016-meter (5/8-in) fire code gypsum board line the other side.

9A.3.6 Door Deviations

Certain doors throughout the facility have a multi-purpose function such as fire, tornado, pressure, missile, seismic, water tight, and/or air tight. Where possible, these doors are rated and/or labeled doors and are identified as rated doors.

When other criteria require the manufacturer to design the door for some other purpose, the door is identified as equivalent to a fire rated door. The doors, except for the Reactor Building equipment access door, are required to have a UL or FM label. Where the door is not constructed as a fire door, such as a containment personnel airlock, it is identified by its main function.

The use of 1.5-hour fire rated elevator doors in 3-hour fire-rated barriers does not compromise the fire barrier. Rather, section 6-1.2.2 of NFPA 804-1995 specifically allows 1.5-hour fire-rated doors in elevator shafts. No other applicable codes (IBC, NFPA 80, NFPA 101, NFPA 252, or ASME A17.1) require elevator doors to have a fire rating of more than 1.5 hours. None of the applicable codes address 3-hour fire-rated elevator shafts. It is not unusual for a door in a fire-rated wall to have a lower fire rating than the applicable fire wall, because the area on both sides of the door will normally be kept free of combustible material to ensure use of the door. Personnel evacuating from a fire are warned by signage at each elevator to use stairs (protected by 3-hour firewalls and doors) and not elevators during a fire.

9A.3.7 Basemats

In general, concrete basemats are not required to be fire-rated because of the lack of any fire hazard in the ground beneath the basemats. The substantial thickness of concrete basemats would provide a large fire rating, if so required.

9A.3.8 Smoke Removal

See Subsection 9.5.1.11 for details of smoke removal provisions in safety-related buildings. In general, smoke, heat, and products of combustion can be exhausted from a fire area by operation of the HVAC system in the purge or exhaust mode, once the fire has been extinguished by the fire protection system.

9A.4 FIRE HAZARD AND SAFE SHUTDOWN ANALYSIS SUMMARY

For fire hazard and safe shutdown analysis for each individual fire area (assuming that automatic and manual fire suppression equipment does not function), see Tables 9A.5-1 through 9A.5-7.

9A.4.1 Reactor Building

As shown on the fire zone drawings (Figures 9A.2-1 through 9A.2-11), with the exception of the Drywell/Containment and Main Steam Tunnel, the Reactor Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one safety division. This arrangement allows any combination of the remaining three divisions to bring the reactor to hot standby and then cold shutdown conditions.

Damage from a fire in the upper drywell is limited to one train of safe shutdown components because of the separation of redundant components, low combustible loading, and primary containment inerting; exceptions are justified. Redundant valves are spatially separated and are designed to fail as-is on loss of actuation power.

During plant shutdown, reactor cooling is provided by either the Reactor Water Cleanup/Shutdown Cooling System (RWCU/SDC) or the Fuel and Auxiliary Pools Cooling System (FAPCS). A fire in the lower drywell, could affect the operation of the RWCU/SDC, but not the FAPCS system to maintain core cooling. A fire in the upper drywell does not prevent either the RWCU/SDC or the FAPCS from providing core cooling through the feedwater lines. A fire in the wetwell does prevent either the RWCU/SDC or FAPCS from providing core cooling. The redundant RWCU/SDC, FAPCS, and Reactor Component Cooling Water System (RCCWS) pumps are powered from separate diesel generator backed electrical load groups.

A fire within the containment does not prevent the FAPCS from providing spent fuel pool cooling. The fire protection system can be used through a cross-connect to provide makeup water to the FAPCS.

Damage from a fire in the lower drywell is also limited to one train of safe shutdown components because of the separation of redundant components, low combustible loading, and primary containment inerting during power operation; and therefore exceptions are justified. Redundant valves are spatially separated and are designed to fail safe on loss of actuation power. Although fire damage may result to both Control Rod Drive (CRD) system and Hydraulic Control Unit (HCU) components from a postulated fire within the lower drywell during a plant outage, there would be no effect to plant safe shutdown because all control rods would already have been inserted into the reactor vessel at the onset of the outage and prior to removing the inerting environment. Further backup of reactor scram capability and maintenance of safe shutdown can be provided by other systems (such as Standby Liquid Control) that are located in other fire areas of the plant.

No additional means of fire detection or suppression is provided for the Isolation Condenser (IC), Passive Containment Cooling (PCC), Buffer, Dryer/Separator Storage, Reactor Well, Suppression, and IC/PCC Expansion Pools which are normally filled with water.

Access to the Steam Tunnel is provided by an opening between the Reactor and Turbine Buildings, and is protected by an open head spray water curtain and by a Class A shielded door from the Reactor Building.

A preaction sprinkler system is provided throughout the CRD pump room to provide personnel protection, allow egress, and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Seismic design of the fire suppression system piping;
- Safe shutdown components located in the primary containment are normally designed to operate in 100% relative humidity environments;
- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as CRD pumps;
- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of standpipes in the Reactor Building;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches;
- Use of watertight doors, where required, to protect equipment.

Post-fire recovery for a design basis fire contained to a single Reactor Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Reactor Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Reactor Building fire area is considered better than currently operating nuclear plants.

Fire protection within the Reactor Building is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Reactor Building, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Reactor Building is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the Reactor Building is seismically mounted to not collapse; repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares;

• Protection of the fire protection system in the Reactor Building from design-basis storms, tornados, and floods is provided by the Reactor Building structure itself.

9A.4.2 Fuel Building

As shown on the fire zone drawings (Figures 9A.2-1 through 9A.2-11), the Fuel Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. The Fuel Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Fuel Building does not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions.

No additional means of fire detection or suppression is provided for the Spent Fuel Pool which is normally filled with water.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of standpipes in the Fuel Building;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Fuel Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Fuel Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Fuel Building fire area is considered better than currently operating nuclear plants.

Fire protection within the Fuel Building is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Fuel Building, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Fuel Building is designed and installed to withstand an SSE and remain operational;

- Fire detection and alarm in the Fuel Building is seismically mounted to not collapse; repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares;
- Protection of the fire protection system in the Fuel Building from design-basis storms, tornados, and floods is provided by the Fuel Building structure itself.

9A.4.3 Control Building

As shown on the fire zone drawings (Figures 9A.2-1 through 9A.2-11), with the exception of the Main Control Room, the Control Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one safety division. This arrangement allows any combination of the remaining three divisions to bring the reactor to hot standby and then cold shutdown conditions.

The nonsafety-related MCR HVAC has redundant air handling units, but uses common ductwork. Where the common ductwork for one air handling unit could be exposed to fire involving the other redundant air handling unit, the HVAC ductwork will be wrapped or encapsulated in 3-hour fire rated material.

Operators can evacuate the Main Control Room after scramming the reactor. The Safety System and Logic Control (SSLC) automatically actuates the safety systems. The postulated fire assumes loss of all component functions in within the Main Control Room, and spurious actuations are considered in the analysis. In order to cool the plant down, the operators can control the nonsafety-related systems from either Remote Shutdown System (RSS) panel, located in separate fire areas within the Reactor Building.

There are very few cable trays in the Main Control Room Complex. Cable access is through the floor from the divisional rooms below or overhead from the non-safety DCIS rooms above, and consists of power cables in flexible metallic or rigid steel conduit, fiber optic cables for the multiplexed control and instrumentation cables, and hard-wired control cables. There is a raised computer floor to allow distribution of the cables via conduit (flex or rigid) or cable pathways. There is a suspended ceiling; only cables associated with nonsafety-related lighting, the fire alarm system, and communication are routed above the false ceiling. These cables are also in conduit.

Paper within the Control Room Complex is required to be stored in approved containers (cabinets, file cabinets, waste baskets) except when in use.

Manual water spray systems are provided internal to each of the charcoal filters, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of standpipes in the Control Building;

- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Control Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Control Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Control Building fire area is considered better than currently operating nuclear plants.

Fire protection within the Control Building is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Control Building, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Control Building is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the Control Building is seismically mounted to not collapse; repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares;
- Protection of the fire protection system in the Control Building from design-basis storms, tornados, and floods is provided by the Control Building structure itself.

9A.4.4 Turbine Building

As shown on the fire zone drawings (Figures 9A.2-12 through 9A.2-19), the Turbine Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage. The Turbine Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Turbine Building does not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions.

Curbs are provided at doorways and around equipment containing significant amount of oil to prevent the spread of flammable liquids.

An automatic deluge system is provided in the open steam tunnel, as a water curtain to provide the separation between Reactor and Turbine Buildings equivalent to a 3-hour fire-rated concrete barrier, and to limit the spread of the fire.

A wet-pipe sprinkler system is provided throughout the areas below the turbine that could be exposed to spreading oil, to provide personnel protection, allow egress, and limit the spread of the fire.

Preaction sprinkler systems are provided throughout the feedwater pump room and on the steam turbine bearings, to provide personnel protection, allow egress, and limit the spread of the fire.

A dry-pipe sprinkler system is provided throughout the main equipment access bay, to provide personnel protection, allow egress, and limit the spread of the fire.

Dry-pilot deluge systems are provided on the EHC skid and seal oil units, to provide property protection and limit the spread of the fire.

A foam deluge system is provided throughout the lube oil tank room, to provide property protection and limit the spread of the fire.

Manual water spray systems are provided internal to each of the off-gas charcoal adsorbers, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as turbine bearings;
- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;

Post-fire recovery for a design basis fire contained to a single Turbine Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Turbine Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Turbine Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Turbine Building:

• Fire barriers are an integral part of the Turbine Building, designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;

- Fire suppression system piping in the Turbine Building is designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the Turbine Building from design-basis storms, tornados, and floods is provided by the Turbine Building structure itself.

9A.4.5 Radwaste Building

As shown on the fire zone drawings (Figures 9A.2-20 through 9A.2-24), the Radwaste Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage. The Radwaste Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Radwaste Building does not affect any equipment required to bring the reactor to hot standby and then cold shutdown conditions.

A wet-pipe sprinkler system is provided throughout the radwaste handling portion of the Radwaste Building, to provide personnel protection, allow egress, and limit the spread of the fire.

A manual water spray system is provided internal to the charcoal filter, to provide property protection and limit the spread of the fire.

Although the Radwaste Building contains radiological materials, fire within any given fire area does not create a radiological release in excess of 10 CFR 20 limits.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Radwaste Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Radwaste Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Radwaste Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Radwaste Building:

- Fire barriers are an integral part of the Radwaste Building, designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;
- Fire suppression system piping in the Radwaste Building is designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the Radwaste Building from design-basis storms, tornados, and floods is provided by the Radwaste Building structure itself.

9A.4.6 Electrical Building

As shown on the fire zone drawings (Figures 9A.2-25 through 9A.2-32), the Electrical Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. The Electrical Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Electrical Building does not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions.

A fire within any of the fire areas associated with either diesel generator is assumed to damage all components within the fire area resulting in loss of all function and consequential damage, including a spurious operation of any one component. Damage to the components in the fire area only affects the operation of one of the two nonsafety-related diesel generators and does not affect the passive safe shutdown components or redundant nonsafety-related diesel generator or train of active components from performing their functions.

Curbs are provided at doorways and around equipment containing significant amount of oil, to prevent the spread of flammable liquids.

There are cable trays in the Technical Support Center. Cables consist of power cables in flexible metallic rigid steel conduit, fiber optic cables for the multiplexed information and instrumentation cables, and a few hard-wired control cables. There is a raised computer floor to allow distribution of the few cables via conduit (flex or rigid) or cable pathways. There is a suspended ceiling but only cables associated with nonsafety-related lighting, the fire alarm system, and communication. These cables are also in conduit.

Paper within the Technical Support Center is required to be stored in approved containers (cabinets, file cabinets, waste baskets) except when in use.

A wet-pipe sprinkler system is provided throughout the Technical Support Center Complex to provide personnel protection, allow egress, and limit the spread of the fire.

Wet-pipe sprinkler systems are provided throughout each of the cable spreading rooms, to provide personnel protection, allow egress, and limit the spread of the fire.

Preaction foam sprinkler systems are provided throughout each of the diesel-generator rooms, to provide personnel protection, allow egress, and limit the spread of the fire.

Foam deluge systems are provided throughout each of the day tank rooms, to provide property protection and limit the spread of the fire.

Manual water spray systems are provided internal to each of the charcoal filters, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as diesel generators;
- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Electrical Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Electrical Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Electrical Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Electrical Building:

- Fire barriers are an integral part of the Electrical Building, designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;
- Fire suppression system piping in the Electrical Building is designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the Electrical Building from design-basis storms, tornados, and floods is provided by the Electrical Building structure itself.

9A.4.7 Yard

The Yard includes all portions of the plant site external to buildings. Only those portions of the Yard containing equipment associated with Turbine and Electrical Buildings are included at this time; the COL applicant shall include fire zone drawings for those portions of the Yard except for that associated with Turbine and Electrical Building equipment.

This FHA includes a simple evaluation of the Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, and Administration Building. A more detailed

evaluation of the Service Water/Water Treatment Building and Service Building will be added during the Combined Construction and Operating License (COL) application for a specific site. A more detailed evaluation of the other buildings will be added as needed during detailed design for each building.

As shown on Turbine Building and Electrical Building fire zone drawings (Figures 9A.2-12 and 9A.2-25) as well as Site fire zone drawing (Figure 9A.2-33), the significant outdoor fire hazards shall separated by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. The Yard shall not contain any safety-related or safe shutdown components, and as such, a fire in the Yard shall not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions.

Foam deluge systems shall be provided on each fuel oil storage tank and the lube oil storage area, to provide property protection and limit the spread of fire.

Automatic deluge systems shall be provided on each Main, Unit Auxiliary, and Reserve Auxiliary transformer, to provide property protection and limit the spread of fire.

Wet-pipe sprinkler systems shall be provided throughout each of the cable tunnels, the diesel firepump room, and the Administration Building, to provide personnel and property protection, allow egress, and limit the spread of the fire.

A dry-pipe sprinkler system shall be provided throughout the Warehouse, to provide personnel and property protection, allow egress, and limit the spread of the fire.

A preaction sprinkler system shall be provided throughout the Training Center, to provide personnel and property protection, allow egress, and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features shall be included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring
 multiple indications of fire prior to discharging water from sprinkler heads, over
 redundant or critical plant equipment such as computer simulators;
- Provision of adequately sized flood containment boundaries to handle the suppression flow and prevent groundwater contamination;
- Installation of electrical equipment above expected flood level heights.

Post-fire recovery for a design basis fire contained to a single Yard fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The outdoor nature of equipment in the Yard facilitates not only original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Yard fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection for the Yard:

- Fire barriers shall be an integral part of the buildings, designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;
- Outdoor fire barriers shall be designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;
- Fire suppression system piping in the buildings and in the Yard shall be designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the buildings from design-basis storms, tornados, and floods shall be provided by the building structure itself.
- Outdoor electrical components in the fire protection system shall be weatherproof or protected against moisture intrusion;
- Dry-pipe systems shall be used for all outdoor fire protection piping;
- Outdoor piping, conduit, and components in the fire protection system shall have the required corrosion protection coatings;
- All outdoor fire protection piping and conduit shall be electrically grounded.

9A.4.8 Service Building

The Service Building shall not contain any system or function that could affect the operation or shutdown of the reactor, nor shall it contain any significant hazards. The Service Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Service Building shall not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions. The COL applicant shall design the Service Building fire protection features.

The basic fire protection features are presented in a method similar to that used for other buildings.

The Service Building shall be a completely separate non-seismic structure. It shall have controlled access tunnels to the Reactor Building, the Turbine Building, the Radwaste Building, and the Electrical Building. The exterior wall facing these buildings shall be a 3-hour barrier constructed of fire-resistive concrete. The controlled access doors in this wall shall be rated 3-hour fire resistive, Class A doors. Other exterior walls shall be constructed of concrete, or of gypsum board mounted on metal studs. The stairwells shall be required for personnel access and egress in the event of a fire and shall be protected with minimum 2-hour barriers in accordance with the Life Safety Code, NFPA 101.

Due to possible variations of the fire loading during operation, the facility shall be fully equipped with an automatic wet-pipe sprinkler system combined with standpipes, hose systems and portable extinguishers throughout its interior. The wet-pipe sprinkler system shall be designed for Light Hazard Occupancy, 4.2 L/min/m² (0.10 gpm/ft²).

Fire detection shall be provided throughout the Service Building with the use of Class A supervised product-of-combustion detection systems. Alarms, both trouble and fire, shall report

to the Main Control Room. Fire alarms shall be sounded throughout the Service Building. Manual fire alarm pull boxes shall be located at each fire hose and at extinguisher stations.

ABC dry chemical portable fire extinguishers shall be provided on each floor of the facility, located at or near the hose stations and alarm pull boxes. Additional portable fire extinguishers shall be provided in various locations for convenience, or where increased human activity is anticipated.

Wall, floor, and ceiling penetrations for piping, HVAC, and cable trays shall be sealed where needed for HVAC control. However, fire dampers or stops shall be provided only where required for personnel protection, as the nature of the activities within the building, coupled with the complete sprinkler coverage, precludes the need to provide multiple fire areas within the Service Building.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features shall be included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Service Building:

- Fire barriers are an integral part of the Service Building, designed and installed as required by the IBC for applicable seismic, wind, hydrodynamic, etc, conditions;
- Fire suppression system piping in the Service Building is designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the Service Building from design-basis storms, tornados, and floods is provided by the Service Building structure itself.

9A.4.9 Service Water/Water Treatment Building

The Service Water/Water Treatment Building (SF/WT) does not contain any system or function that could affect the operation or shutdown of the reactor, nor does it contain any significant hazards. The SF/WT does not contain any safety-related or safe shutdown components, and as such, a fire in the SF/WT does not affect any of the four divisions used to bring the reactor to hot standby and then cold shutdown conditions. The COL applicant shall design the SF/WT fire protection features. The basic fire protection features are presented in a method similar to that used for other buildings.

The SF/WT is a non-seismic structure, and may be attached to the Cooling Towers. None of the walls or floors are fire-rated. Stairwells shall be required for personnel access and egress in the event of a fire and therefore are protected with minimum 2-hour barriers in accordance with the Life Safety Code, NFPA 101.

A wet-pipe sprinkler system shall be provided throughout the diesel firepump room, to provide personnel and property protection, allow egress, and limit the spread of the fire.

Fire detection shall be provided throughout the SF/WT with the use of Class A supervised product-of-combustion detection systems. Alarms, both trouble and fire, shall report to the Main Control Room.

ABC dry chemical portable fire extinguishers shall be provided on each floor of the facility, located at or near the hose stations and alarm pull boxes. Additional portable fire extinguishers shall be provided in various locations for convenience, or where increased human activity is anticipated.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features shall be included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Provisions for curbs around open hatches.

9A.5 FIRE PROTECTION ANALYSES BY ROOM OR FIRE ZONE

Cumulative damage (property loss) and restoration from fire initiation and suppression activities, but excluding replacement power costs, is subjectively categorized as follows:

Negligible: Less than \$5000Minor: Less than \$50,000

• Moderate: Less than \$2,000,000 (typical insurance deductible)

• Significant: Greater than \$2,000,000

Cumulative plant operational effects from fire initiation and suppression activities are categorized as follows:

• None: No effect to any power production or plant equipment

• Power Reduction: Event could require or cause reduction in turbine output, due to

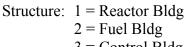
reduced steam flow rate resulting from loss of some equipment

• Turbine Trip: Event could require or cause stopping turbine

• LOPP: Event could require or cause loss of all on-site power sources

Reactor Scram: Event could require or cause operators to scram the reactor, achieve hot standby condition, and continue to cold shutdown condition if necessary

The first three digits of a four-digit room number contain the following information: XXXX



3 = Control Bldg 4 = Turbine Bldg

5 = Electrical Bldg

6 = Radwaste Bldg

7, 8, 9 = Other Bldgs

Fire area numbers correspond to the lowest major room within the fire area.

Floor Level within Bldg

Assigned to: 1 = safety-related Div I

2 = safety-related Div II 3 = safety-related Div III

4 = safety-related Div IV

5 = nonsafety redundant A 6 = nonsafety redundant B

9 = nonsafety vertical chases

P = pool

9A.5.1 Reactor Building

See Table 9A.5-1 for detailed fire hazards analysis of each fire area within the Reactor Building. See Figures 9A.2-1 through 9A.2-11 for Reactor Building fire zone drawings.

9A.5.2 Fuel Building

See Table 9A.5-2 for detailed fire hazards analysis of each fire area within the Fuel Building. See Figures 9A.2-1 through 9A.2-8 and Figure 9A.2-10 for Fuel Building fire zone drawings.

9A.5.3 Control Building

See Table 9A.5-3 for detailed fire hazards analysis of each fire area within the Control Building. See Figures 9A.2-2 through 9A.2-5 and Figure 9A.2-11 for Control Building fire zone drawings.

9A.5.4 Turbine Building

See Table 9A.5-4 for detailed fire hazards analysis of each fire area within the Turbine Building. See Figures 9A.2-12 through 9A.2-19 for Turbine Building fire drawings

9A.5.5 Radwaste Building

See Table 9A.5-5 for detailed fire hazards analysis of each fire area within the Radwaste Building.

See Figures 9A.2-20 through 9A.2-24 for Radwaste Building fire drawings.

9A.5.6 Electrical Building

See Table 9A.5-6 for detailed fire hazards analysis of each fire area within the Electrical Building.

See Figures 9A.2-25 through 9A.2-32 for Electrical Building fire drawings.

9A.5.7 Yard

See Table 9A.5-7 for detailed fire hazards analysis of each fire area for portions of the Yard. The remainder of the Yard is site specific and is designed by the COL applicant. The applicant will provide additional information with the application for COL.

See Figures 9A.2-12, 9A.2-25, and 9A.2-33 for fire drawings for portions of the Yard.

9A.5.8 Service Building

The Service Building is protected in accordance with applicable NFPA codes. A detailed, room-by-room fire protection analysis is not required because this building does not contain any system or function that could affect the safe shutdown of the reactor.

9A.5.9 Service Water/Water Treatment Building

The SF/WT is a site-specific structure and is designed by the COL applicant; the applicant will provide additional information with the application for COL.

Table 9A.5-1, Reactor Building

	Fire Area:	F1104	Description:	Description: Elevator A					
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1			
		DCD Fig:		В	uilding code occupancy classification	: F-1			
		9A.2-1	Electrical classification: none						
		9A.2-2	Safety-related divisional equipment or cables: none						
		9A.2-3		Nonsafety-related redundant trains or equipment or cables: none					
		9A.2-4	Surround	ed by fire barriers rated a					
		9A.2-5		Excep	ot: basemat (non-rated); elevator d	oors (1.5 hr rated)			
		9A.2-6							
Consisting of	of the followin	g Rooms:	Fire De	tection	Fire Suppres	ssion			
EL		Potential Combustibles	Primary	Backup	Primary	Backup			
-11500	1104	Class IIIB lubricants Cable insulation Electrical equipment Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	CO2 fire extinguisher (outside room) ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)			
		< 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fit				
			-	, and the second	Complete burnout of all equipm	ent and cables within			
			quipment, impact of fire upon	n:	this Fire Area affects no safety-r				
	lant operation:				safety divisions and both redund	lant trains A and B are			
Radiol		None, no radiological m			operable.				
	•	Travel distance limits to							
		Access via stairwells and	d hoistway doors						
	Property loss:	lNegligihle							

	Fire Area:	F1105	Description: Elevator C					
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME A	17.1		
		DCD Fig:	_	В	uilding code occupancy classification:	F-1		
		9A.2-1	Electrical classification: none					
		9A.2-2		Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-3						
		9A.2-4	Surround	ed by fire barriers rated a				
		9A.2-5		Excep	ot: basemat (non-rated); elevator do	ors (1.5 hr rated)		
		9A.2-6						
Consisting	of the following	ig Rooms:	Fire De	tection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
11500	440-				G02 m			
-11500	1105	Class IIIB lubricants Cable insulation Electrical equipment	Area-wide ionization	Manual pulls (outside Elev at each landing)	CO2 fire extinguisher (outside room)	Hose racks (in nearby stairwell)		
	1292	Class IIIB lubricants Cable insulation		8/	ABC fire extinguishers (outside Elev at each landing)			
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP of function, impact of design basis fire	* *		
			quipment, impact of fire upo		Complete burnout of all equipme this Fire Area affects no safety-re	nt and cables within		
P	lant operation:	None			safety divisions and both redunda	ant trains A and B are		
		None, no radiological m			operable.			
Radiol	Life sefety:	Travel distance limits to	EXITs meet NFPA 101					
					•			
		Access via stairwells and	l hoistway doors					

		_						
	Fire Area:		Description: HCU A					
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-1	Electrical classification: none					
		9A.2-2			elated divisional equipment or cables:			
		9A.2-3		Nonsafety-related red	undant trains or equipment or cables:	A		
		9A.2-4	Surround	ed by fire barriers rated at				
				Except	t: basemat (non-rated)			
				_				
		,	_					
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
				•				
-11500	1110	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire		
-9100	1			(outside stairwell	(in nearby stairwell)	extinguishers		
-6400				at each landing)	(in neuro) seum weiz)	envinguismer s		
-1000	1312	†		ut cuch minding)				
1000	1012		1					
			•		•			
		< 700	Anticipated combustible lo	oad. MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire			
		700	o nopriminor da domo uomen	7 1000 1111110, 1110/1112	Complete burnout of all equipme			
Assuming	operation of in	stalled fire extinguishing ea	quipment, impact of fire upo	n·	this Fire Area results in loss of on			
		Reactor scram	arpinent, impuet of the upo		and Division I safe shutdown equ			
		Contained within building	າອ		well as loss of redundant Division			
		Travel distance limits to			circuits; if HCU's are unavailable for reactor scram,			
Mani		Access via stairwells			either FMCRD portion of CRD s	-		
1.14110	Property loss:				can be used to scram reactor (cor	•		
	110perty 1055.				for either are located outside this			
					systems, remaining three division	**		
I								
					redundant train B are unaffected by fire and are operable. Automatic logic control scheme (any two out			
					of four redundant signals) remain	ns operable.		

	Fire Area:	F1120	Description: HCU B					
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-1	Electrical classification: none					
		9A.2-2		Safety-re	elated divisional equipment or cables:	П		
		9A.2-3			undant trains or equipment or cables:	В		
		9A.2-4	Surround	led by fire barriers rated at	: 3 hours			
				Except: basemat (non-rated)				
Consisting	of the followir	ng Rooms:	Fire D	etection	Fire Suppress	ion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1107	Class A combustibles Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell	Hose racks (in nearby stairwell)	ABC fire extinguishers		
-11500	1120	Cable insulation		at each landing)	· · · · · · · · · · · · · · · · · · ·			
-9100								
-6400								
-1000	1322							
P) Radiol	lant operation: ogical release: Life safety:	< 700 700 stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to	g	e load limit, MJ/m2	Assuming automatic & manual FP of function, impact of design basis fire Complete burnout of all equipment this Fire Area results in loss of on and Division II safe shutdown equivell as loss of redundant Division circuits; if HCU's are unavailable	on safe shutdown: nt and cables within ly redundant train B nipment and circuits, as I and II HCU solenoid		
Manua	al firefighting:	Access via stairwells			either FMCRD portion of CRD sy	-		
	Property loss:				can be used to scram reactor (con			
	, ,			•	for either are located outside this systems, remaining three divisions redundant train A are unaffected operable. Automatic logic control	Fire Area); for other s of safe shutdown and by fire and are		

Fire Area	: F1130	Description:	HCU C				
	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	DCD Fig:			ilding code occupancy classification	F-1		
	9A.2-1	Electrical classification: none					
	9A.2-2	Safety-related divisional equipment or cables: III					
	9A.2-3			lundant trains or equipment or cables:			
	9A.2-4	Surround	ed by fire barriers rated at				
			Except	t: basemat (non-rated)			
]					
Consisting of the followi	ng Rooms:	Fire De	etection	Fire Suppres	sion		
EL Room#	Potential Combustibles	Primary	Backup	Primary	Backup		
<u>-11500</u> 1130	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire		
-9100 -6400			(outside stairwell	(in nearby stairwell)	extinguishers		
-1000 1332	4		at each landing)				
-1000 1332				+			
Plant operation Radiological release Life safety	: Reactor scram : Contained within buildin : Travel distance limits to : Access via stairwells		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme this Fire Area results in loss of or and Division III safe shutdown eas well as loss of redundant Divis solenoid circuits; if HCU's are un scram, either FMCRD portion of system can be used to scram reaccircuits for either are located out other systems, remaining three d shutdown and redundant train B and are operable. Automatic log two out of four redundant signals	e on safe shutdown: ent and cables within ally redundant train A quipment and circuits, ion I and II HCU navailable for reactor CCRD system or SLC etor (components and side this Fire Area); for ivisions of safe are unaffected by fire ic control scheme (any		

	Fire Area:	F1140	Description:	HCII D		1		
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	Building.	DCD Fig:	Building code occupancy classification: F-1					
		9A.2-1	Electrical classification: none					
		9A.2-2		Safety-re	elated divisional equipment or cables:			
		9A.2-3			undant trains or equipment or cables:			
		9A.2-4	Surround	ed by fire barriers rated at				
					: basemat (non-rated)			
				1				
G :::	0.1 0.11				D' C			
	of the followin			etection	Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
11500	1140	C 11 ' 1 '	A .1	3.6 1 11	TT 1	ADC C		
-11500 -9100	1140	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire		
-9100 -6400	1			(outside stairwell at each landing)	(in nearby stairwell)	extinguishers		
-1000	1342	+		at each fanding)				
-1000	1342							
	l	ı						
		< 700	Anticipated combustible lo	nad MJ/m2	Assuming automatic & manual FP e	equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:			
			1 - 1	· · · · · · · · · · · · · · · · · · ·	Complete burnout of all equipment			
Assuming of	operation of ins	stalled fire extinguishing ec	uipment, impact of fire upo	n:	this Fire Area results in loss of on			
		Reactor scram	•		and Division IV safe shutdown eq			
Radiol	logical release:	Contained within buildir	ıg		well as loss of redundant Division	I and II HCU solenoid		
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		circuits; if HCU's are unavailable	for reactor scram,		
Manu	al firefighting:	Access via stairwells			either FMCRD portion of CRD sy			
	Property loss:	Moderate			can be used to scram reactor (con	ponents and circuits		
				•	for either are located outside this	Fire Area); for other		
					systems, remaining three divisions	s of safe shutdown and		
					redundant train A are unaffected			
					operable. Automatic logic control scheme (any two out			
					of four redundant signals) remain	s operable.		

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:		Description: Nonsafety NE quadrant					
1	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
	DCD Fig:			Building code occupancy classification: F-1				
	9A.2-1	9A.2-6			Electrical classification	n: none		
	9A.2-2	9A.2-7		Safety-re	lated divisional equipment or cable	es: I		
	9A.2-3	9A.2-8		Nonsafety-related red	undant trains or equipment or cable	es: A		
	9A.2-4	9A.2-9	Surrounde	ed by fire barriers rated at	3 hours			
	9A.2-5				basemat (non-rated); elevator	doors (1.5 hr rated)		
Consisting	of the followin	g Rooms:	Fire De	tection	Fire Suppre	ession		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
11500	4400					G02 m		
-11500	1100	Electrical equipment	Area-wide ionization	Manual pulls	Hose racks	CO2 fire extinguishers,		
		Class IIIB lubricants		(outside stairwell	(in nearby stairwells)	ABC fire extinguishers		
	1150 1151	Cable insulation		at each landing)				
	,	Class IIIB lubricants				ABC fire extinguishers		
-6400	1250, 1293	Cable insulation						
-1000	1300, 1304							
4650	1400	Cable insulation						
	below floor							
5050	1400	Cable insulation			CO2 fire extinguishers	Hose racks		
9060	1500	Electrical equipment				(in nearby stairwells)		
< 700 EL 4	4650 & below;	< 1400 EL 5050 & above	Anticipated combustible loa	ad, MJ/m2	Assuming automatic & manual F.	P equipment does not		
700 EL 4	4650 & below;	1400 EL 5050 & above	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis f	ire on safe shutdown:		
					Complete burnout of all equipm	nent and cables within		
Assuming (operation of ins	stalled fire extinguishing eq	uipment, impact of fire upor	1:	this Fire Area results in loss of	only Division I shutdown		
		Reactor scram			equipment and circuits, as well	•		
Radio	logical release:	Contained within building	ıg		A; remaining three divisions of			
		Travel distance limits to			redundant train B are unaffecte			
Manu		Access via stairwells	-		operable. Automatic logic cont	·		
	Property loss:				of four redundant signals) remains operable. Both A and			
	-F7				B nonsafety-related on-site pow	•		
					by fire and are operable.	or sources are analietted		
1					by in c and are operable.			

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:	F1152	Description:	Nonsafety SE quadrant				
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
	DCD Fig:		Building code occupancy classification: F-1					
	9A.2-1	9A.2-6		Electrical classification: none				
	9A.2-2	9A.2-7		Safety-re	lated divisional equipment or cables	s: III		
	9A.2-3	9A.2-8		Nonsafety-related redu	andant trains or equipment or cables	s: A		
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated at	3 hours			
	9A.2-5			Except	basemat (non-rated); elevator d	loors (1.5 hr rated)		
Consisting	of the followin		Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1101, 1106	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
	1152	Cable insulation		(outside stairwell	(in nearby stairwells)			
	1153		Area-wide photoelectric	at each landing)				
-6400	1204, 1294		Area-wide ionization					
	1251, 1252							
-1000	1301, 1306							
4650	1401	Cable insulation						
	below floor							
5050	1401	Cable insulation			CO2 fire extinguishers	Hose racks		
9060	1501	Electrical equipment				(in nearby stairwells)		
			_					
			Anticipated combustible lo		Assuming automatic & manual FP			
700 EL 4	650 & below;	1400 EL 5050 & above	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi			
					Complete burnout of all equipm			
			uipment, impact of fire upor	n:	this Fire Area results in loss of o			
		Reactor scram			shutdown equipment and circuit	,		
Radiol		Contained within buildin			redundant train A; remaining t			
		Travel distance limits to	EXITs meet NFPA 101		shutdown and redundant train I			
Manu		Access via stairwells			and are operable. Automatic log			
	Property loss:	Moderate			two out of four redundant signal			
					Both A and B nonsafety-related	-		
					are unaffected by fire and are of	perable.		

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:		Description:	Nonsafety NW quadrant	t		
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 72, 90A, 101, 804		
	DCD Fig:			Bu	ilding code occupancy classification	n: F-1	
	9A.2-1	9A.2-6	Electrical classification: none				
	9A.2-2	9A.2-7	Safety-related divisional equipment or cables: IV				
	9A.2-3	9A.2-8		Nonsafety-related red	undant trains or equipment or cable	s: B	
	9A.2-4	9A.2-9	Surround	led by fire barriers rated at	3 hours	-	
	9A.2-5]	Except	basemat (non-rated)		
Consisting	of the following	og Rooms:	Fire De	etection	Fire Suppre	ession	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
LL	Room π	1 otential Comoustioles	1 Tillial y	Баскир	Timary	Баскир	
-11500	1103	Electrical equipment Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks (in nearby stairwells)	CO2 fire extinguishers, ABC fire extinguishers	
	1160, 1161	Class IIIB lubricants	1	 		ABC fire extinguishers	
-6400	1260	Cable insulation					
	1296						
-1000	1303, 1305						
4650	1403	Cable insulation					
	below floor						
5050	1403	Cable insulation	1		CO2 fire extinguishers	Hose racks	
9060	1503	Electrical equipment			5 5 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	(in nearby stairwells)	
	1650 & bolow	< 1400 EL 5050 & above	Anticipated combustible lo	and MI/m2	Associate de marca de la Companya del Companya de la Companya del Companya de la		
< 700 EL	4030 & Delow	· · ITUU LL SUSU & ADUVC	TAIRICIDATED COMPUSITORS IC		Assuming automatic & manual Fi	P equipment does not	
					Assuming automatic & manual Fl function, impact of design basis fi		
			Unsprinklered combustible		function, impact of design basis fi	re on safe shutdown:	
700 EL	4650 & below:	1400 EL 5050 & above	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm	re on safe shutdown: nent and cables within this	
700 EL Assuming	4650 & below:	stalled fire extinguishing eq		e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only	re on safe shutdown: nent and cables within this Division IV shutdown	
700 EL Assuming	operation of insplant operation:	stalled fire extinguishing eq Reactor scram	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train	
700 EL Assuming	operation of including operation:	stalled fire extinguishing eq Reactor scram Contained within building	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and	
Assuming Radio	operation of in: Plant operation: logical release: Life safety:	stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of redundant train A are unaffected	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and ed by fire and are	
Assuming Radio	operation of installation of installation operation of installation operation of installation operation of installation operation operat	stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to Access via stairwells	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of redundant train A are unaffects operable. Automatic logic contra	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and ed by fire and are rol scheme (any two out of	
Assuming Radio	operation of in: Plant operation: logical release: Life safety:	stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to Access via stairwells	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of redundant train A are unaffects operable. Automatic logic contri four redundant signals) remains	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and ed by fire and are rol scheme (any two out of s operable. Both A and B	
Assuming Radio	operation of installation of installation operation of installation operation of installation operation of installation operation operat	stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to Access via stairwells	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of redundant train A are unaffecte operable. Automatic logic contr four redundant signals) remains nonsafety-related on-site power	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and ed by fire and are rol scheme (any two out of s operable. Both A and B	
Assuming Radio	operation of installation of installation operation of installation operation of installation operation of installation operation operat	stalled fire extinguishing eq Reactor scram Contained within buildin Travel distance limits to Access via stairwells	Unsprinklered combustible uipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm Fire Area results in loss of only equipment and circuits, as well B; remaining three divisions of redundant train A are unaffects operable. Automatic logic contri four redundant signals) remains	re on safe shutdown: nent and cables within this Division IV shutdown as loss of redundant train safe shutdown and ed by fire and are rol scheme (any two out of s operable. Both A and B	

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:	F1162	Description:	Nonsafety SW quadrant	1			
	Building:				NFPA 10, 14, 72, 90A, 101, 804			
	DCD Fig:				ilding code occupancy classification	F-1		
	9A.2-1	9A.2-6	7	Electrical classification: none				
	9A.2-2	9A.2-7	Safety-related divisional equipment or cables: II					
	9A.2-3	9A.2-8		Nonsafety-related red	undant trains or equipment or cables	В		
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated at	3 hours			
	9A.2-5		_	Except	basemat (non-rated); elevator de	oors (1.5 hr rated)		
Consisting	of the following	g Rooms:	Fire De	tection	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1102 1162	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside stairwell	Hose racks (in nearby stairwells)	ABC fire extinguishers		
	1163		Area-wide photoelectric	at each landing)				
-6400	1295		Area-wide ionization					
4650	1402	Cable insulation						
	below floor							
5050	1402	Cable insulation			CO2 fire extinguishers	Hose racks		
9060	1502	Electrical equipment				(in nearby stairwells)		
700 EL Assuming	operation of insellent operation:	stalled fire extinguishing ex Reactor scram Contained within building		load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipment this Fire Area results in loss of or equipment and circuits, as well a B; remaining three divisions of s	e on safe shutdown: ent and cables within ally Division II shutdown s loss of redundant train afe shutdown and		
Manı		Travel distance limits to Access via stairwells Moderate	EXITs meet NFPA 101		redundant train A are unaffected operable. Automatic logic control of four redundant signals) remains B nonsafety-related on-site power by fire and are operable.	ol scheme (any two out ns operable. Both A and		

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:	F1170	Description:	Drywell and Containmen	nt .		
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:		Building code occupancy classification: F-1				
	9A.2-1	9A.2-6			Electrical classification:	none	
	9A.2-2	9A.2-7		Safety-re	elated divisional equipment or cables:	I, II, III, IV	
	9A.2-3	9A.2-8		Nonsafety-related red	lundant trains or equipment or cables:	A, B	
	9A.2-4	9A.2-9	Surrour	nded by fire barriers rated a	t: 3 hours	•	
	9A.2-5			Except	t: basemat (non-rated), including ba	asaltic concrete	
Consisting	of the following Roon		Fire Det	ection	Fire Suppress:	ion	
EL	Room #	Potential Combustibl	Primary	Backup	Primary	Backup	
-8800	1170	Class IIIB	None	Portable fire	Inerted environment during	Hose racks and	
-6400	1206	lubricants		detection used	power operation	ABC fire	
4650	14P0	Cable insulation		as needed		extinguishers	
9060	1570	Filter media		during outage		(via hatches at EL	
17500	-, ,	None		activities		-6400, EL 13570,	
27000	18P3A, 18P3B,					EL 17500, and EL	
	18P4A, 18P4B,					34000)	
	18P4C, 18P5A,					·	
	18P5B, 18P5C						
	18P3C, 18P3D,						
	18P4D, 18P4E,						
	18P4F, 18P6A,						
	18P6B, 18P6C						
		< 700	Anticipated combustible load,		Assuming automatic & manual FP		
		700	Unsprinklered combustible loa	d limit, MJ/m ²	function, impact of design basis fire		
		C			During plant operation, this entir		
Assuming of			ipment, impact of fire upon:		by nitrogen and will not support combustion. When not		
			nge required to restore		inerted (during shutdowns and ou		
			ontainment structure ts to EXITs meet NFPA 101		burnout of all equipment and cab		
	Manual firefighting:		is to EALLS meet INFFA 101		Area is prevented by limited amo		
	Property loss:				and spatial separation between re		
	1 Toperty 1088.	Significant			circuits to ensure that no more th		
					shutdown equipment will be affect	eted by a single fire.	
					See also section 9A.6.		
							

	Fire Area:	F1190	Description: Stairwells A and E				
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:		Building code occupancy classification: F-1				
	9A.2-1	9A.2-6	Electrical classification: none				
	9A.2-2	9A.2-7		Safety-re	elated divisional equipment or cab	oles: none	
	9A.2-3	9A.2-8			undant trains or equipment or cab	oles: none	
	9A.2-4	9A.2-9	Surround	led by fire barriers rated at			
	9A.2-5]	Except	basemat (non-rated)		
Consisting	of the fellowin	a Dooma:	Fire D	etection	Fire Supp	proceion	
EL	onsisting of the following Rooms: EL Room # Potential Combustibles		Primary	Backup	Primary	Backup	
EL	Room #	Potential Combustibles	Pililary	Баскир	Filliary	Баскир	
-11500 -6400 -1000 4650	1190	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
9060 13570 17500 27000 34000	1690						
P Radiol	Plant operation: logical release: Life safety:	None None, no radiological ma Travel distance limits to Access via exterior and i	EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual function, impact of design basis Complete burnout of all equip this Fire Area affects no safety safety divisions and both redu operable.	s fire on safe shutdown: oment and cables within y-related equipment; all	

	Fire Area:	F1191	Description:	Stairwell B			
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
	DCD Fig:				uilding code occupancy classification	n: F-1	
	9A.2-1	9A.2-6			Electrical classification	n: none	
	9A.2-2	9A.2-7			related divisional equipment or cables		
	9A.2-3	9A.2-8			dundant trains or equipment or cables	s: none	
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated a			
	9A.2-5]	Excep	Except: basemat (non-rated)		
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppression		
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
					1		
-11500 -6400 -1000	1191	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
4650				<i>8)</i>			
9060							
13570							
17500							
27000							
34000							
37000							
		negligible	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FF	equipment does not	
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi	re on safe shutdown:	
P	lant operation: ogical release:			n:	Complete burnout of all equipm this Fire Area affects no safety-resafety divisions and both redunction operable.	related equipment; all	
Manua		Access via exterior and i					
	Property loss:		***				
	1 3						

	Fire Area:	F1192	Description:	Stairwells C and F		
	Building:	Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804	
	DCD Fig:		_	Bui	ilding code occupancy classification:	F-1
	9A.2-1	9A.2-6			Electrical classification:	none
	9A.2-2	9A.2-7			lated divisional equipment or cables:	
	9A.2-3	9A.2-8			undant trains or equipment or cables:	none
	9A.2-4	9A.2-9	Surround	led by fire barriers rated at		
	9A.2-5			Except	basemat (non-rated)	
	of the followin			etection	Fire Suppres	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-11500	1192	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers
-6400				(outside stairwell		
-1000				at each landing)		
4650						
9060						
13570	1691					
17500						
27000						
34000						
			1	1.347/.0	4	
		negligible	Anticipated combustible lo	•	Assuming automatic & manual FP	
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	
		. 11 1 6			Complete burnout of all equipme	
		stalled fire extinguishing eq	uipment, impact of fire upo	n: I	this Fire Area affects no safety-re	
	lant operation:		4 • 1		safety divisions and both redunda	ant trains A and B are
Kadiol		None, no radiological ma			operable.	
	•	Travel distance limits to				
Manu		Access via exterior and in	nterior doors			
	Property loss:	Negligible				

	Fire Area:	F1193	Description:	Stairwell D			
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
	DCD Fig:			Bi	uilding code occupancy classification		
	9A.2-1	9A.2-6			Electrical classification		
	9A.2-2	9A.2-7			elated divisional equipment or cables		
	9A.2-3	9A.2-8			dundant trains or equipment or cables	none	
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated a			
	9A.2-5]	Excep	Except: basemat (non-rated)		
Consisting	onsisting of the following Rooms:		Fire De	etection	Fire Suppres	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500 -6400 -1000 4650 9060 13570 17500 27000 34000	1193	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
P Radiol	lant operation: ogical release: Life safety:	None None, no radiological ma Travel distance limits to Access via exterior and i	EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fit Complete burnout of all equipm this Fire Area affects no safety-r safety divisions and both redund operable.	re on safe shutdown: ent and cables within elated equipment; all	

	Fire Area		Description:			
	Building	: Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804; ASME	
	DCD Fig:		=	Bu	ilding code occupancy classification	F-1
	9A.2-1	9A.2-6	Electrical classification: none			
	9A.2-2	9A.2-7			elated divisional equipment or cables	
	9A.2-3	9A.2-8			undant trains or equipment or cables	none
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated at		
	9A.2-5]	Except	basemat (non-rated); elevator do	ors (1.5 hr rated)
Consisting of	of the followi	ng Rooms:	Fire De	etection	Fire Suppres	sion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-11500 37000	1194	Class IIIB lubricants Cable insulation Class IIIB lubricants Cable insulation Electrical equipment	Area-wide ionization	Manual pulls (outside Elev at each landing)	ABC fire extinguishers (outside Elev at each landing) CO2 fire extinguisher (outside room)	Hose racks (in nearby stairwell)
Pl Radiolo Manua	lant operation ogical release Life safety	None None, no radiological ma Travel distance limits to Access via stairwells and	EXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipmenthis Fire Area affects no safety-resafety divisions and both redund operable.	e on safe shutdown: ent and cables within elated equipment; all

	Fire Area:	F1195	Description:	Interior Stairwell A		
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804	
		DCD Fig:	_	Ві	uilding code occupancy classificat	ion: F-1
		9A.2-1	1		Electrical classificat	ion: none
		9A.2-2		Safety-re	elated divisional equipment or cab	oles: none
		9A.2-3		Nonsafety-related rec	dundant trains or equipment or cab	les: none
		9A.2-4	Surround	led by fire barriers rated a	t: 3 hours	
				Excep	t: basemat (non-rated)	
Consisting	of the followin	ig Rooms:	Fire De	etection	Fire Supp	pression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-11200 -9100 -6400 -1000	1195	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers
		<u> </u>				
		negligible 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual function, impact of design basis	fire on safe shutdown:
		700 stalled fire extinguishing ed	-	e load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet	s fire on safe shutdown: oment and cables within y-related equipment; all
P	lant operation:	stalled fire extinguishing examples. None	Unsprinklered combustible quipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet safety divisions and both redu	s fire on safe shutdown: oment and cables within y-related equipment; all
P	Plant operation: logical release:	stalled fire extinguishing ed None None, no radiological materials	Unsprinklered combustible quipment, impact of fire upo aterials present	e load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet	s fire on safe shutdown: oment and cables within y-related equipment; all
P. Radiol	Plant operation: logical release: Life safety:	700 stalled fire extinguishing ed None None, no radiological material distance limits to	Unsprinklered combustible quipment, impact of fire upo aterials present DEXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet safety divisions and both redu	s fire on safe shutdown: oment and cables within y-related equipment; all
P. Radiol	Plant operation: logical release: Life safety:	None None, no radiological market distance limits to Access via interior doors.	Unsprinklered combustible quipment, impact of fire upo aterials present DEXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet safety divisions and both redu	s fire on safe shutdown: oment and cables within y-related equipment; all

	Fire Area:	F1196	Description:	Interior Stairwell B				
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804			
		DCD Fig:		Ві	uilding code occupancy classifica	tion: F-1		
		9A.2-1	Electrical classification: none					
		9A.2-2			elated divisional equipment or cal			
		9A.2-3			dundant trains or equipment or cal	bles: none		
			Surround	led by fire barriers rated a				
				Excep	t: basemat (non-rated)			
			_					
Consisting	of the followin	ig Rooms:	Fire De	etection	Fire Sup	pression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11200	1196	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-9100				(outside stairwell				
				at each landing)				
					<u> </u>			
		negligible	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual	FP equipment does not		
		700	Unsprinklered combustible	•	function, impact of design basis fire on safe shutdown:			
			-		Complete burnout of all equi	pment and cables within		
Assuming o	peration of ins	stalled fire extinguishing e	quipment, impact of fire upo	n:	this Fire Area affects no safet	ty-related equipment; all		
Pl	lant operation:	None			safety divisions and both red	undant trains A and B are		
Radiol	ogical release:	None, no radiological m	aterials present		operable.			
	Life safety:	Travel distance limits to	EXITs meet NFPA 101					
Manua	al firefighting:	Access via interior door	s					
	Property loss:	Negligible						
				-				

	Fire Area:	F1197	Description:	Interior Stairwell C				
	Building:	Reactor	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	=	Ві	uilding code occupancy classification	: F-1		
		9A.2-1			Electrical classification			
		9A.2-2		Safety-r	elated divisional equipment or cables	none		
		9A.2-3			dundant trains or equipment or cables	none		
			Surround	led by fire barriers rated a				
				Excep	t: basemat (non-rated)			
			_					
Consisting	of the followin	ng Rooms:	Fire De	etection	Fire Suppres	ssion		
EL	Room#	Potential Combustibles	Primary	Backup	Primary	Backup		
-11200	1197	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguisher		
-6400				(outside stairwell				
				at each landing)				
						I		
		negligible	Anticipated combustible lo	-	Assuming automatic & manual FP			
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fir	e on safe shutdown:		
					Complete burnout of all equipme			
			quipment, impact of fire upo	n:	this Fire Area affects no safety-r	elated equipment; all		
D	lant operation:				safety divisions and both redund	ant trains A and B are		
	logical release:	None, no radiological m			operable.			
			DAZIO ANDRA 101					
Radiol	Life safety:	Travel distance limits to						
Radiol	Life safety:	Access via interior door						

	Fire Area:	F1198	Description:	Interior Stairwell D			
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-1			Electrical classification	tion: none	
		9A.2-2		Safety-re	elated divisional equipment or cal	bles: none	
		9A.2-3			lundant trains or equipment or cal	oles: none	
			Surround	led by fire barriers rated a	t: 3 hours		
				Excep	t: basemat (non-rated)		
			J				
Consisting of	of the followin	g Rooms:	Fire De	etection	Fire Sup	pression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
44000	1100	7.			***	1. D.C. dt	
-11200 -9100 -6400	1198	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguisher	
Pl	lant operation: ogical release:	None None, no radiological m		e load limit, MJ/m2	Assuming automatic & manual function, impact of design basis Complete burnout of all equithis Fire Area affects no safet safety divisions and both redoperable.	s fire on safe shutdown: pment and cables within ty-related equipment; all	
Manus		Travel distance limits to Access via interior doors					
ivialiu			,				
	Property loss:	Neguginie					

	Fire Area:	F1203	Description:	CRD and Containment A	Access		
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 13, 14, 72, 101, 804		
		DCD Fig:	_	Bui	lding code occupancy classification	on: F-1	
		9A.2-2	Electrical classification: none				
		9A.2-3			lated divisional equipment or cabl		
		9A.2-4			indant trains or equipment or cabl	es: A, B	
			Surround	led by fire barriers rated at:			
				Except:	none		
	of the followin			etection	Fire Suppr		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-6400	1203	Class IIIB lubricants	Cross-zoned ionization	Suppression flowswitch		Hose racks	
		Cable insulation	and spot heat		12.2 L/min per m2 over entire area	(in nearby stairwells)	
-1000	1302, 1308	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside stairwells	Hose racks (in nearby stairwells)	ABC fire extinguishers	
	1307	Electical equipment Class IIIB lubricants		at each landing)		CO2 fire extinguishers, ABC fire extinguishers	
		Cable insulation					
		> 700 (room 1203)	Anticipated combustible lo				
		< 700 (other rooms)	Anticipated combustible lo		Assuming automatic & manual I		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis		
					Complete burnout of all equip		
			uipment, impact of fire upo	on: 1	this Fire Area affects redundar		
		Reactor scram; outage re			pumps A and B, but does not a		
Kadio		Contained within buildir			equipment; all safety divisions		
	I tre carefy:	Travel distance limits to	EXIIS MEET NFPA 101	J	nonsafety-related on-site powe	r sources are unaffected	
Me		A access with addissessible			1 6 1 12		
Manu		Access via stairwells			by fire and are operable.		

	Fire Area:	F1210	Description:	Division I Battery		
	Building:	Reactor			NFPA 10, 14, 72, 101, 804	
		DCD Fig:	• • • • • • • • • • • • • • • • • • • •		ilding code occupancy classification	: F-1 per IBC 307.9.11
		9A.2-2			Electrical classification	
		9A.2-3		Safety-re	elated divisional equipment or cables	: I
					undant trains or equipment or cables	none
			Surround	ed by fire barriers rated at		
				Except	elevator doors (1.5 hr rated)	
Consisting of	of the followin		Fire De	etection	Fire Suppres	ssion
		Potential Combustibles				
EL	Room #	and Hazards	Primary	Backup	Primary	Backup
5.10.0	1010	40.000				
-6400	1210	12,360 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks
		Battery cell cases Cable insulation		(outside stairwell)		(in nearby stairwell)
		Cable insulation				
<u>_</u>						
		< 1400	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fin	re on safe shutdown:
					Complete burnout of all equipm	
	peration of ins	talled fire extinguishing eq	uipment, impact of fire upo	n:	this Fire Area results in loss of o	
					aguinment, vemeining three gef	. 4 12 2
Pl	lant operation:				equipment; remaining three saf	•
Pl	lant operation: ogical release:	None, no radiological ma			redundant A and B equipment a	re unaffected by fire and
Pl Radiolo	lant operation: ogical release: Life safety:	None, no radiological ma Travel distance limits to	EXITs meet NFPA 101		redundant A and B equipment a are operable. Automatic logic co	re unaffected by fire and ontrol scheme (any two
Pl Radiolo Manua	lant operation: ogical release: Life safety: al firefighting:	None, no radiological ma Travel distance limits to Access via stairwell and i	EXITs meet NFPA 101		redundant A and B equipment a	re unaffected by fire and ontrol scheme (any two
Pl Radiolo Manua	lant operation: ogical release: Life safety:	None, no radiological ma Travel distance limits to Access via stairwell and i	EXITs meet NFPA 101		redundant A and B equipment a are operable. Automatic logic co	re unaffected by fire and ontrol scheme (any two

	Fire Area:	F1220	Description:	Division II Battery			
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1 per IBC 307.9.11				
		9A.2-2			Electrical classification	none	
		9A.2-3		Safety-re	elated divisional equipment or cables	: II	
					undant trains or equipment or cables	none	
			Surround	ed by fire barriers rated at			
				Except	elevator doors (1.5 hr rated)		
]				
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppres	ssion	
<u> </u>		Potential Combustibles	1		The state of the s		
EL	Room #	and Hazards	Primary	Backup	Primary	Backup	
-6400	1220	12,360 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)	
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP		
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible		function, impact of design basis fir	re on safe shutdown:	
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme	re on safe shutdown: ent and cables within	
		1400 stalled fire extinguishing eq		load limit, MJ/m2	function, impact of design basis fin Complete burnout of all equipme this Fire Area results in loss of or	re on safe shutdown: ent and cables within nly Safety Division II	
P	lant operation:	1400 stalled fire extinguishing eq None	Unsprinklered combustible upon	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipmenthis Fire Area results in loss of or equipment; remaining three safe	e on safe shutdown: ent and cables within nly Safety Division II ety divisions and both	
P	lant operation: ogical release:	stalled fire extinguishing eq None None, no radiological ma	Unsprinklered combustible uipment, impact of fire uponterials present	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipment this Fire Area results in loss of or equipment; remaining three safe redundant A and B equipment a	e on safe shutdown: ent and cables within nly Safety Division II ety divisions and both re unaffected by fire an	
P Radiol	lant operation: ogical release: Life safety:	stalled fire extinguishing eq None None, no radiological ma Travel distance limits to	Unsprinklered combustible uipment, impact of fire upon iterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme this Fire Area results in loss of or equipment; remaining three safe redundant A and B equipment a are operable. Automatic logic co	re on safe shutdown: ent and cables within nly Safety Division II ety divisions and both re unaffected by fire an ontrol scheme (any two	
P Radiol	lant operation: ogical release: Life safety:	stalled fire extinguishing eq None None, no radiological ma Travel distance limits to Access via stairwell and	Unsprinklered combustible uipment, impact of fire upon iterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipment this Fire Area results in loss of or equipment; remaining three safe redundant A and B equipment a	re on safe shutdown: ent and cables within nly Safety Division II ety divisions and both re unaffected by fire an ontrol scheme (any two	

	Fire Area	: F1230	Description:	Division III Battery				
	Building	Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804			
		DCD Fig:	Building code occupancy classification: F-1 per IBC 307.9.11					
		9A.2-2	Electrical classification: none					
		9A.2-3	Safety-related divisional equipment or cables: III					
					lundant trains or equipment or cables	none		
			Surround	led by fire barriers rated a				
				Excep	t: none			
Consisting	of the followi		Fire De	etection	Fire Suppre	ssion		
EL	Room#	Potential Combustibles and Hazards	Primary	Doolaan	Primary	Doolan		
EL	KOOIII #	and frazards	Filliary	Backup	Filliary	Backup		
-6400	1230	6840 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)		
	operation of in		Anticipated combustible lo Unsprinklered combustible juipment, impact of fire upo	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fit Complete burnout of all equipm this Fire Area results in loss of o equipment; remaining three saf redundant A and B equipment a	re on safe shutdown: ent and cables within nly Safety Division III		

1	Fire Area:	F1240	Description:	Division IV Battery				
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:		Ви	ailding code occupancy classification	: F-1 per IBC 307.9.11		
		9A.2-2			Electrical classification			
		9A.2-3			elated divisional equipment or cables			
					undant trains or equipment or cables	s: none		
			Surround	ed by fire barriers rated a	t: 3 hours			
				Excep	t: none			
			_					
Consisting (of the following	og Rooms.	Fire De	etection	Fire Suppre	ssion		
Consisting C	or the followin	Potential Combustibles			The Supple			
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
-6400	1240	6840 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
-0400	1240	Battery cell cases	Arca-wide ionization	(outside stairwell)	CO2 in c extinguishers	(in nearby stairwell)		
		Cable insulation		(outside stail well)		(in hear by stain wen)		
			1					
1								
			<u></u>					
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP	* *		
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible		function, impact of design basis fit	re on safe shutdown:		
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fit Complete burnout of all equipm	re on safe shutdown: ent and cables within		
		1400 stalled fire extinguishing ed	-	e load limit, MJ/m2	function, impact of design basis fr Complete burnout of all equipm this Fire Area results in loss of o	re on safe shutdown: ent and cables within only Safety Division IV		
Pl	ant operation:	1400 stalled fire extinguishing ed None	Unsprinklered combustible quipment, impact of fire upon	e load limit, MJ/m2	function, impact of design basis fr Complete burnout of all equipm this Fire Area results in loss of o equipment; remaining three saf	re on safe shutdown: ent and cables within only Safety Division IV fety divisions and both		
Pl	ant operation: ogical release:	stalled fire extinguishing ex None None, no radiological ma	Unsprinklered combustible quipment, impact of fire upon aterials present	e load limit, MJ/m2	function, impact of design basis fr Complete burnout of all equipm this Fire Area results in loss of o equipment; remaining three saf redundant A and B equipment a	re on safe shutdown: ent and cables within only Safety Division IV cety divisions and both are unaffected by fire and		
Pl Radiolo	ant operation: ogical release: Life safety:	stalled fire extinguishing ed None None, no radiological materials to	Unsprinklered combustible quipment, impact of fire upon aterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis from Complete burnout of all equipment this Fire Area results in loss of o equipment; remaining three safe redundant A and B equipment a are operable. Automatic logic of	re on safe shutdown: ent and cables within only Safety Division IV fety divisions and both are unaffected by fire and control scheme (any two		
Pl Radiolo Manua	ant operation: ogical release: Life safety:	stalled fire extinguishing ed None None, no radiological ma Travel distance limits to Access via stairwell and	Unsprinklered combustible quipment, impact of fire upon aterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis fr Complete burnout of all equipm this Fire Area results in loss of o equipment; remaining three saf redundant A and B equipment a	re on safe shutdown: ent and cables within only Safety Division IV fety divisions and both are unaffected by fire and control scheme (any two		

	Fire Area:	F1262	Description: B Demineralizers					
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-2	Electrical classification: none					
		9A.2-3			elated divisional equipment or cables			
					undant trains or equipment or cables	s: B		
			Surround	ed by fire barriers rated at				
				Except	t: none			
			J					
Consisting of the following Rooms:			Fire De	tection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-6400	1261 1262	Class IIIB lubricants Cable insulation	Area-wide ionization	Process indication	Hose racks at stairwells (via hatches at EL -1000)	ABC fire extinguishers (at EL -1000)		
		< 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FF	equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:			
			_		Complete burnout of all equipm	ent and cables within		
			quipment, impact of fire upon	n:	this Fire Area results in loss of o	only redundant train B		
	lant operation:				equipment; all safety divisions a	and train A equipment		
Radiol		Contained within building			are unaffected by fire and are o	perable. Both A and B		
Life safety: Travel distance limits to					on-site power sources are unaffe	ected by fire and are		
	Manual firefighting: Limited access via hatch		es		operable.			
Manu	al firefighting: Property loss:		es		operable.			

	Fire Area	: F1311	Description: Division I Electrical					
	Building	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	DCD Fig:		Building code occupancy classification: F-1					
	9A.2-2	9A.2-6	Electrical classification: none					
	9A.2-3	9A.2-7	Safety-related divisional equipment or cables: I					
	9A.2-4	9A.2-8		Nonsafety-related rec	lundant trains or equipment or cables:	none		
	9A.2-5		Surround	led by fire barriers rated a	t: 3 hours			
			•	Excep	t: elevator doors (1.5 hr rated)			
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppress	ion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-6400	1211	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
-1000	1311	Electrical equipment		(outside stairwell		at stairwells		
	1313	Cable insulation		at each landing)				
13570	1610			9				
17500	1711							
	1700, 1712	Cable insulation	1		ABC fire extinguishers			
	1713	Class IIIB lubricants						
	1710	Electical equipment			ABC fire extinguishers, CO2 fire			
		Cable insulation			extinguishers			
		Class IIIB lubricants						
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible	e load limit, MJ/m2	Assuming automatic & manual FP efunction, impact of design basis fire Complete burnout of all equipment	on safe shutdown:		
		stalled fire extinguishing ed	uipment, impact of fire upo	n: 1	this Fire Area results in loss of on	-		
	Plant operation				equipment; remaining three safet			
Radio		None, no radiological ma			redundant A and B equipment are			
		Travel distance limits to			are operable. Automatic logic co	, .		
Manı		: Access via stairwell and : Significant	interior doors		out of four redundant signals) ren	nains operable.		

	Fire Area	: F1321	Description:	Division II Electrical					
	Building	Reactor	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
_	DCD Fig:		Building code occupancy classification: F-1						
	9A.2-2	9A.2-6	Electrical classification: none						
	9A.2-3	9A.2-7			elated divisional equipment or cables:				
	9A.2-4	9A.2-8			lundant trains or equipment or cables:	none			
	9A.2-5		Surround	ed by fire barriers rated a					
				Excep	t: elevator doors (1.5 hr rated)				
onsisting of the following Rooms:			Fire De	etection	Fire Suppress.	ion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-6400	1221	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks			
-1000	1321	Electrical equipment		(outside stairwell		at stairwells			
	1323	Cable insulation		at each landing)					
13570	1620								
17500	1721								
	1720	Cable insulation			ABC fire extinguishers				
	1722	Class IIIB lubricants							
	1723								
		< 1400	Anticipated combustible lo	and MI/m2	Accuming outomatic & manual ED a	aguinment does not			
		1400	Unsprinklered combustible		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:				
		1400	Onsprinklered combustible	load IIIIIt, WIJ/III2	Complete burnout of all equipmen				
ssuming o	peration of ir	stalled fire extinguishing e	equipment, impact of fire upo	n:	this Fire Area results in loss of on				
Pl	lant operation	None			equipment; remaining three safet	y divisions and both			
Radiolo	ogical release	None, no radiological m	naterials present		redundant A and B equipment are				
		Travel distance limits to			are operable. Automatic logic con				
Manus	al firefighting	Access via stairwell and	l interior doors		out of four redundant signals) ren	` •			
ivianue		Significant			· · · · · · · · · · · · · · · · · · ·				

	Fire Area	F1331	Description: Division III Electrical					
	Building	Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804			
	DCD Fig:		_	Building code occupancy classification: F-1				
	9A.2-2	9A.2-6	Electrical classification: none					
	9A.2-3	9A.2-7			elated divisional equipment or cables: l			
	9A.2-4	9A.2-8			lundant trains or equipment or cables:	ione		
	9A.2-5		Surround	Surrounded by fire barriers rated at: 3 hours				
				Excep	t: elevator doors (1.5 hr rated)			
Consisting	onsisting of the following Rooms:		Fire De	etection	Fire Suppressi	on		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-6400	1231	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
-1000	1331	Electrical equipment	1	(outside stairwell	gg	at stairwells		
13570	1630	Cable insulation		at each landing)				
17500	1731			37				
	1703	Cable insulation	1		ABC fire extinguishers			
	1730	Class IIIB lubricants						
	1732							
		< 1400	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP ed	quipment does not		
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
					Complete burnout of all equipmen			
			quipment, impact of fire upo	n:	this Fire Area results in loss of only			
	lant operation				equipment; remaining three safety			
Radio		None, no radiological m			redundant A and B equipment are			
		Travel distance limits to			are operable. Automatic logic con	` •		
Manu		Access via stairwell and	interior doors		out of four redundant signals) rem	ains operable.		
	Droporty logg	Significant						

	Fire Area:	F1341	Description: Division IV Electrical						
	Building:	Reactor	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	DCD Fig:		_	Building code occupancy classification: F-1					
	9A.2-2	9A.2-6	Electrical classification: none						
	9A.2-3	9A.2-7			elated divisional equipment or cables:				
	9A.2-4	9A.2-8			undant trains or equipment or cables:	none			
	9A.2-5		Surround	ed by fire barriers rated a					
				Excep	:: none				
Consisting	of the followir	na Daama:	Fire Do	etection	Fire Suppress	ion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
EL	Koom #	Fotential Combustibles	Filmary	Баскир	Filliary	Баскир			
-6400	1241	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks			
-1000	1341	Electrical equipment	Tirea wide ionization	(outside stairwell	CO2 me extinguishers	at stairwells			
13570	1640	Cable insulation		at each landing)		at stail wells			
17500	1741			s /					
	1701, 1742	Cable insulation	1		ABC fire extinguishers				
	ĺ	Class IIIB lubricants							
	1740	Electrical equipment	1		ABC fire extinguishers, CO2 fire				
		Cable insulation			extinguishers				
		Class IIIB lubricants							
			7						
		< 1400	Anticipated combustible lo	•	Assuming automatic & manual FP				
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire				
		. 11 1 0			Complete burnout of all equipmen				
			quipment, impact of fire upo	n: I	this Fire Area results in loss of on	•			
	Plant operation:		-44		equipment; remaining three safet				
Kadio		None, no radiological m			redundant A and B equipment ar				
Me		Travel distance limits to			are operable. Automatic logic co				
Manu		Access via stairwell and	interior doors		out of four redundant signals) ren	nains operable.			
	Property loss:	ISIGNIficant			i .				

	Fire Area:	F1450	Description:	Hydrogen Gas A					
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 101, 497, 804						
		DCD Fig:		Building code occupancy classification: F-1					
		9A.2-4			Electrical classification:	Group B Class I Div II			
			Safety-related divisional equipment or cables: none						
					dundant trains or equipment or cables:	A			
			Surround	ed by fire barriers rated a					
				Excep	ot: basemat (non-rated)				
Consisting (of the followin	a Rooms.	Fire De	etection	Fire Suppress	ion			
EL		Potential Combustibles	Primary	Backup	Primary	Backup			
DE .	TCOOII II	1 otoniai Comoastioles	1 minuty	Вискир	1 mary	Вискир			
4650	1450	Electrical equipment	Area-wide spot heat	Manual pull	ABC fire extinguisher	Hydrant			
		Cable insulation	_	(outside room)		•			
		16 m3 Hydrogen							
		=00		1.147/-0					
		< 700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not				
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:				
A		4-11-1-6			Complete burnout of all equipment				
	pperation of ins lant operation:		quipment, impact of fire upor	n:	this Fire Area affects only redund				
			atorials present		and no safety-related equipment;	•			
Radioid		None, no radiological m Travel distance limits to		_					
Manua		Access via door	EATTS HEET NFFA 101		power sources are unaffected by f	ire and are operable.			
	Property loss:								
	1 Toperty 1088.	IVIIIIUI							

ESBWR

	Fire Area	: F1460	Description: Hydrogen Gas B						
	Building	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 101, 497, 804						
		DCD Fig:	Building code occupancy classification: F-1						
		9A.2-4		Electrical classification: Group B Class I Div II					
				Safety-r	related divisional equipment or cables:	none			
					dundant trains or equipment or cables:	В			
			Surround	led by fire barriers rated a					
				Excep	ot: basemat				
onsisting	of the following	ng Rooms:	Fire De	etection	Fire Suppress	zion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
	TOOM #	1 otential comoustioles	1 Timur y	Бискир	1 minuty	Вискир			
4650	1460	Electrical equipment Cable insulation	Area-wide spot heat	Manual pull (outside room)	ABC fire extinguisher	Hydrant			
		16 m3 Hydrogen		(11.11.11.11.1)					
		< 700	Anticipated combustible lo	•	Assuming automatic & manual FP equipment does not				
		700	Unsprinklered combustible	e load limit, MJ/m2		act of design basis fire on safe shutdown:			
		. 11 1 0			Complete burnout of all equipme				
			equipment, impact of fire upo	n: I	this Fire Area affects only redund				
	Plant operation				and no safety-related equipment;	•			
Radio		None, no radiological m		•					
Μ		Travel distance limits to	EXIIS MEET NFPA 101		power sources are unaffected by f	are and are operable.			
Manu	al firefighting Property loss	Access via door							

Table 9A.5-1, Reactor Building (Cont.)

	Fire Area:	F1600	Description:	Refueling Floor and Co	mmon Access			
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
	DCD Fig:		Building code occupancy classification: F-1					
	9A.2-4	9A.2-7]	•	Electrical classification			
	9A.2-5	9A.2-8	Safety-related divisional equipment or cables: none					
	9A.2-6	9A.2-9	N		nt trains or equipment or cable			
				ed by fire barriers rated a		•		
			•	2	t: driveway (non-rated); elev	vator doors (1.5 hr rated)		
Consisting	of the following Ro		Fire De	etection	Fire Sup	pression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	1490	Transient combustibles	Area-wide linear heat	Manual pulls	Hose racks	ABC fire extinguishers		
13570	1600	Class IIIB lubricants]	(outside stairwell	at stairwells			
		Electrical equipment		at each landing)				
		Cable insulation		8/				
17500	17P3	None	1					
27000	18P0,18P1,18P2							
34000	1900	Transient combustibles	Area-wide ionization					
	1903	Electrical equipment						
	1904	Cable insulation						
	1905	Class A combustibles						
	1906	Filter media						
	above ceiling	Cable insulation]					
	1905,1906							
	1901, 1902	None						
	1907, 1908							
		< 700	Anticipated combustible lo		Assuming automatic & man			
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design b			
					Complete burnout of all eq			
Assuming of		d fire extinguishing equipm		•	within this Fire Area affec			
		None; restoration requir			and B equipment, but does	s not affect any safety-		
R		Contained within building			related equipment; all safe	•		
		Travel distance limits to	EXITs meet NFPA 101		unaffected by a fire and ar			
1		Access via stairwells			B on-site power sources ar	e unaffected by fire and		
	Property loss:	Moderate			are operable.			
	1100011, 1000.			I	are operance			

	Fire Area:	F1770	Description:	Main Steam Tunnel			
	Building:	Reactor & Turbine	Applicable codes:	IBC; Reg Guide 1.189; 1	NFPA 10, 14, 72, 101, 804		
	DCD Fig:		_	Bu	ilding code occupancy classification:		
	9A.2-7	9A.2-13		Electrical classification: none			
	9A.2-8	9A.2-14			elated divisional equipment or cables:		
		9A.2-15			undant trains or equipment or cables:	none	
		9A.2-16	Surround	ed by fire barriers rated at			
				Except	north side (water curtain sprinkle	ers in F4100)	
Consisting	of the following	g Rooms:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
8200		Class IIIB lubricants Cable insulation	Area-wide linear heat	Manual pulls (outside stairwell	Hose racks at stairwells	ABC fire extinguishers at access doors	
	4393			at each landing)			
17500	1770						
Radio	<u> </u>		rrip; re ng EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area results in loss of Dicontainment isolation instrument isolation is maintained by inboard this Fire Area. No safe shutdown by this fire; all other safety-relate redundant train A and B equipment the fire and are operable. See also	e on safe shutdown: ent and cables within ivision I, II, III, and IV eation; containment d MSIV's, outside of functions are affected ed equipment and both ent are unaffected by	

Table 9A.5-2, Fuel Building

	Fire Area:	E2100	Descriptions	Now and Chart English	alia a			
		Fuel & Reactor	Applicable and act	Description: New and Spent Fuel Handling Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
	DCD Fig:	ruei & Reactor	Building code occupancy classification: F-1					
	9A.2-1	9A.2-5	Electrical classification: none					
	9A.2-2	9A.2-6		Safety-re	lated divisional equipment or cables:			
	9A.2-3	9A.2-7			undant trains or equipment or cables:			
	9A.2-4	9A.2-8	Surround	ed by fire barriers rated at		Λ, Β		
	711,2-4)/1,2-0	Surrouna		basemat (non-rated); elevator do	ors (1.5 hr rated)		
				Елеері.	basemat (non rateu); elevator do	ors (no mrateu)		
Consisting	of the following Roc	oms:	Fire De	tection	Fire Suppress	sion		
EL		Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	2101	Class IIIB lubricants	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire		
11000	2100, 2150, 2160,		Area-wide ionization	(outside stairwell	(in nearby stairwells)	extinguishers		
	2151, 2161,			at each landing)	(III IIcui sy souii Weiis)	on many in the second		
	2102, 2190, 2191			(
	21P0, 21P1, 21P2	None	Area-wide linear heat					
-6400		Class IIIB lubricants	Area-wide ionization					
	2251, 2261	Cable insulation						
-1000	2300, 2301, 2302	Electrical equipment						
4650	2400	Class IIIB lubricants	Area-wide linear heat					
		Cable insulation						
	2401	Transient combustibles	Area-wide ionization					
		Class A combustibles						
17500	1702	None						
			3					
		< 700	Anticipated combustible lo		Assuming automatic & manual FP			
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire			
					Complete burnout of all equipme			
Assuming		fire extinguishing equipme			Fire Area results in loss of only re			
		None; restoration requir			equipment; all safety-related and			
ا		Contained within building			equipment is unaffected by fire an			
		Travel distance limits to	EXIIS meet NFPA 101		Makeup water capability to the S			
		Access via stairwells			FP system is unaffected by fire an			
	Property loss:	woderate			and B on-site power sources are u	inaffected by fire and		
					are operable.			

	Fire Area:	F2192	Description:	Elevator A				
	Building:	Fuel	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 72, 101, 804; ASME	A17.1		
		DCD Fig:		Building code occupancy classification: F-1				
		9A.2-1	Electrical classification: none					
		9A.2-2		Safety-re	lated divisional equipment or cables	none		
		9A.2-3			undant trains or equipment or cables	none		
	9A.2-4		Surrounded by fire barriers rated at: 3 hours					
	9A.2-5			Except	: basemat (non-rated); elevator de	oors (1.5 hr rated)		
Consisting	of the followin	a Pooms.	Fire De	etection	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
EL	Koom #	1 otential Combustibles	1 Hillary	Баскир	Timary	Васкир		
-11500	2192	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)		
9060	2500	Class IIIB lubricants Cable insulation Electrical equipment	-		CO2 fire extinguisher (outside room)			
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fir	* *		
P Radiol	lant operation: logical release: Life safety:	None None, no radiological m Travel distance limits to Access via stairwell and	quipment, impact of fire upon aterials present DEXITs meet NFPA 101		Complete burnout of all equipment this Fire Area affects no safety-requipment; all safety divisions and A and B are operable.	ent and cables within elated or safe shutdown		

	Fire Area:	F2193	Description:	Stairwell A			
	Building:	Fuel	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
_	DCD Fig:		_	Building code occupancy classification: F-1			
	9A.2-1	9A.2-5			Electrical classification:		
	9A.2-2	9A.2-6		-	elated divisional equipment or cables:		
	9A.2-3	9A.2-7			lundant trains or equipment or cables:	none	
	9A.2-4	9A.2-8	Surround	ed by fire barriers rated a	t: 3 hours		
				Excep	t: basemat		
Consisting o	of the following	Rooms.	Fire De	etection	Fire Suppres	sion	
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
-11500 -6400 -1000 4650 9060	2193	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
22500		negligible 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fire		
Assuming operation of installed fire extinguishing equiparts operation: Plant operation: None Radiological release: Life safety: Manual firefighting: Property loss: Negligible			uipment, impact of fire upor aterials present EXITs meet NFPA 101	Complete burnout of all equipment at this Fire Area affects no safety-related equipment; all safety divisions and bo A and B are operable.		ent and cables within clated or safe shutdown	

	Fire Area:	F2490	Description:	Stairwell B			
	Building:	Fuel	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-4			Electrical classification		
		9A.2-5			elated divisional equipment or cabl		
		9A.2-6			lundant trains or equipment or cabl	es: none	
		9A.2-7	Surround	led by fire barriers rated a			
		9A.2-8		Excep	t: basemat		
Consisting o	f the followin	g Rooms:	Fire De	etection	Fire Suppr	ression	
EL	Room#	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	2490	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
22500				(outside stairwell			
22500				at each landing)			
			•				
		negligible	Anticipated combustible lo		Assuming automatic & manual I		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis		
					Complete burnout of all equip		
			uipment, impact of fire upor	n: 1	this Fire Area affects no safety		
	ant operation:		1		equipment; all safety divisions	and both redundant trains	
Kadiolo	Radiological release: None, no radiological ma						
Ma		Travel distance limits to	EXIIS MEET NFPA 101				
		Access via exterior door					
	Property loss	. Negligible					

	Fire Area:	F2600	Description: HVAC Penthouse A				
	Building:	Fuel	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-7	Electrical classification: none				
		9A.2-8		Safety-re	elated divisional equipment or cables	: none	
					undant trains or equipment or cables	: A	
			Surround	ed by fire barriers rated at	3 hours		
				Except	: none		
]				
Consisting o	of the following	g Rooms:	Fire De	etection	Fire Suppres	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
22500	2600	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
		Cable insulation		(outside stairwells)	(in nearby stairwells)		
		Filter media					
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:		
			.	,	Complete burnout of all equipm		
Assuming of	peration of ins	talled fire extinguishing eq	uipment, impact of fire upor	n:	this Fire Area results in loss of o		
		None; restoration requir			all safety-related or safe shutdown and redundant train		
		None, no radiological ma			B equipment is unaffected by fire and are operable.		
		Travel distance limits to			Both A and B on-site power sources are unaffected by		
Manua		Access via stairwells			fire and are operable.	•	
	Property loss:	Moderate			*		

	Fire Area	Fire Area: F2601		Description: HVAC Penthouse B				
	Building	Fuel	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
	DCD Fig:		_	Building code occupancy classification: F-1				
	9A.2-1	9A.2-5			Electrical classification			
	9A.2-2	9A.2-6			elated divisional equipment or cables			
	9A.2-3	9A.2-7			dundant trains or equipment or cables	s: B		
	9A.2-4	9A.2-8	Surround	led by fire barriers rated a				
				Excep	t: basemat (non-rated)			
Consisting of	of the followin	g Rooms:	Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	2194	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
22500	2601	Class IIIB lubricants Cable insulation Filter media		(outside stairwell at each landing)		8		
		< 700 700	Anticipated combustible lo Unsprinklered combustible	•	Assuming automatic & manual FF function, impact of design basis fi	re on safe shutdown:		
			uipment, impact of fire upor	1:	Complete burnout of all equipment and cables within this Fire Area results in loss of only redundant train B;			
		None; restoration require			all safety-related or safe shutdov			
Radiol		None, no radiological m				e and are operable.		
3.6		Travel distance limits to	EXITs meet NFPA 101		Both A and B on-site power sour	rces are unaffected by		
Manual firefighting: Access via stairwells		: Access via stairwells			fire and are operable.			
Iviana	Property loss	3 5 3 .						

Table 9A.5-3, Control Building

	Fire Area:	F3100	Description:	Corridor A			
	Building:	Control	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 14, 72, 90A, 101, 804		
		DCD Fig:		В	uilding code occupancy classification:		
		9A.2-2	Electrical classification: none				
		9A.2-3			related divisional equipment or cables:		
		9A.2-4			dundant trains or equipment or cables:	none	
		9A.2-5	Surrounde	ed by fire barriers rated			
				Exce	pt: basemat (non-rated); elevator d	oors (1.5 hr rated)	
Consisting	of the following	og Rooms.	Fire Det	tection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
	Ttooiii ii		1 minuty	Duvinup	111111111	Buthup	
-7400	3100	Cable insulation	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire extinguishers	
	over sump	Class A combustibles		(at EXITs)	(in nearby stairwells)		
	3100		Area-wide ionization				
-2000	3200						
	3203						
4650	3300						
		< 700	Anticipated combustible loa	ad MI/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fir	* *	
		700	Chisprinkiered comoustione	1044 111111, 1413/1112	Complete burnout of all equipme		
Assuming	operation of in	stalled fire extinguishing e	quipment, impact of fire upor	1:	this Fire Area affects no safety-r		
	Plant operation:		To be a second		equipment; all safety divisions an		
		None, no radiological m	aterials present		trains A and B are operable.		
			EXITs meet NFPA 101				
Manu		Access via doors	·				
	Property loss:						
	1)	<u> </u>					

	Fire Area:	F3101	Description:	Corridor B		
	Building:	Control	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 72, 90A, 101, 804	
		DCD Fig:	<u> </u>	Bui	lding code occupancy classification	: F-1
		9A.2-2			Electrical classification:	none
		9A.2-3			lated divisional equipment or cables	
		9A.2-4			indant trains or equipment or cables	none
		9A.2-5	Surround	ed by fire barriers rated at		
				Except	basemat (non-rated); elevator d	oors (1.5 hr rated)
			T		P: 0	
	of the followin		Fire De		Fire Suppres	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-7400	3101	Cable insulation	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire extinguishers
2000	over sump	Class A combustibles		(at EXITs)	(in nearby stairwells)	
-2000	rest of 3101		Area-wide ionization			
					1	
		< 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not
		700	Unsprinklered combustible	•	function, impact of design basis fire on safe shutdown:	
			•	,	Complete burnout of all equipm	
Assuming of	operation of ins	stalled fire extinguishing ec	juipment, impact of fire upor	n:	this Fire Area affects no safety-r	
	lant operation:				equipment; all safety divisions a	
Radiol	ogical release:	None, no radiological ma	iterials present		trains A and B are operable.	
	Life safety: Travel distance limits to EXITs meet NFPA 101				•	
Manu	al firefighting:	Access via doors				
	Property loss:	Negligible				

Table 9A.5-3, Control Building (cont.)

	Fire Area:	F3110	Description:	Division I Electrica	I			
	Building:				89; NFPA 10, 14, 72, 75, 90A, 101,	804		
	Bullanig.	DCD Fig:	Building code occupancy classification: F-1					
		9A.2-2	1	Dui	Electrical classification:			
		9A.2-3		Safaty ral	La contraction de la contracti			
		9A.2-4		Safety-related divisional equipment or cables: I Nonsafety-related redundant trains or equipment or cables: A				
		9A.2-5		y fire barriers rated at:		A		
		9A.2-3	Surrounded by		basemat (non-rated)			
				Ехсері.	basemat (non-rateu)			
Consisting	of the followin	ng Pooms:	Fire Dete	ction	Fire Supp	orassion		
EL		Potential Combustibles	Primary	l Backup	Primary	Backup		
	duct bank		None	None	None	None		
-7400		Cable insulation			1			
	3110		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
6000	below floor	4		(outside stairwell		(in nearby stairwells)		
-6800	3250			at each landing)				
	3110	Cable insulation						
		Electrical equipment						
	3251	None			Hose racks	ABC fire		
9060	3401	Class IIIB lubricants			(in nearby stairwells)	extinguishers		
	3404	Cable insulation						
	3406	Filter media						
	Charcoal	Charcoal	HVAC temperature		Internal manual spray			
	Filter		indication					
			-					
		400 EL -6800 & below	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP e	equipment does not		
700 at	t EL 9060; 14	00 EL -6800 & below	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire			
					The nonsafety-related MCR HVA	C has redundant air handling		
			uipment, impact of fire upo	n:	units, but uses common ductwork	. Where the common ductwork		
	Plant operation:				for one air handling unit could be	exposed to fire involving the		
Radio	logical release:	None, no radiological ma	iterials present		other redundant air handling unit	t, the HVAC ductwork will be		
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		wrapped or encapsulated in 3-hou			
Manu	al firefighting:	Access via stairwells			burnout of all equipment and cab	_		
	Property loss:			1	in loss of only Division I safe shute			
	• •			•	as redundant train A non-safety e			
					divisions of safe shutdown and red			
					unaffected by fire and are operable			
					scheme (any two out of four redu	_		
					scheme (any two out of four redui	iuant signais) remains operable.		
1								

	Fire Area:	F3120	Description:	Description: Division II Electrical					
	Building:	Control	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 75, 101, 804				
		DCD Fig:	_	Bu	ilding code occupancy classification:				
		9A.2-2		Electrical classification: none					
		9A.2-3			elated divisional equipment or cables:				
				Nonsafety-related redundant trains or equipment or cables					
			Surround	led by fire barriers rated a					
				Excep	t: basemat (non-rated)				
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppres	sion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-7400	duct bank	Cable insulation	None	None	None	None			
	3120		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks			
	below floor			(outside stairwell	8	(in nearby stairwells)			
-6800	3120	Cable insulation		at each landing)					
		Electrical equipment							
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP	equipment does not			
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fir	e on safe shutdown:			
					Complete burnout of all equipme				
			quipment, impact of fire upo	n:	this Fire Area results in loss of or				
	Plant operation:				shutdown equipment circuits; re				
Radio		None, no radiological m			of safe shutdown and redundant				
		Travel distance limits to	EXITs meet NFPA 101	equipment are unaffected by fire and are operable					
Manual firefighting: Access via stairwells				Automatic logic control scheme (any two out of for					
1714114	Property loss: Significant				redundant signals) remains oper				

	Fire Area:	E2120	Description:	Division III Electric	nal			
	Building:				89; NFPA 10, 14, 72, 75, 90A, 101, 804			
	Building.	DCD Fig:	Applicable codes.	IDC, Reg Guide 1.1	Building code occupancy classification: F-1			
		9A.2-2	1	Electrical classification: none				
		9A.2-3		Safety-related divisional equipment or cables:				
					ed redundant trains or equipment or cables			
		9A.2-5	Surrounded by	fire barriers rated at:				
					basemat (non-rated)			
Consisting	of the followin	g Rooms:	Fire Detec	ction	Fire Suppress	ion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	duct bank	Cable insulation	None	None	None	None		
	3130		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
	below floor			(outside stairwell		(in nearby stairwells)		
-6800	3260			at each landing)				
	3130	Cable insulation						
		Electrical equipment						
	3261	Insulation			Hose racks	ABC fire		
9060	3402	Class IIIB lubricants			(in nearby stairwells)	extinguishers		
	3403	Cable insulation						
	3407	Filter media				_		
		Charcoal	HVAC temperature		Internal manual spray			
	Filter		indication					
		400 EL -6800 & below 00 EL -6800 & below	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP equip function, impact of design basis fire on s	safe shutdown:		
					The nonsafety-related MCR HVAC ha	_		
			uipment, impact of fire upo	n:	units, but uses common ductwork. W			
	lant operation:				for one air handling unit could be expe			
Radio		None, no radiological ma			other redundant air handling unit, the			
		Travel distance limits to	EXITs meet NFPA 101		wrapped or encapsulated in 3-hour fir	-		
Manu		Access via stairwells			burnout of all equipment and cables within this Fire Area results			
Property loss: Significant]	in loss of only Division III safe shutdov			
					well as redundant train B non-safety e			
					divisions of safe shutdown and redund			
					unaffected by fire and are operable. A	Automatic logic control		
					scheme (any two out of four redundan	t signals) remains operable.		
						_		

	Fire Area:	F3140	Description:	Division VI Electrical			
	Building:				NFPA 10, 14, 72, 75, 101, 804		
		DCD Fig:			ilding code occupancy classification:	F-1	
		9A.2-2			Electrical classification:		
		9A.2-3	Safety-related divisional equipment or cables: IV				
		9A.2-4		Nonsafety-related redu	undant trains or equipment or cables:	none	
		9A.2-5	Surround	ed by fire barriers rated at	3 hours		
				Except	: basemat (non-rated)		
			-				
	of the followin		Fire De		Fire Suppres	ī l	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-7400	duct bank	Cable insulation	None	None	None	None	
-7400	3140		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
	below floor			(outside stairwell		(in nearby stairwells)	
-6800	3140	Cable insulation		at each landing)			
		Electrical equipment					
4650	3301	Cable insulation					
	below floor						
5250	3301	Cable insulation					
		Electrical equipment					
		< 1400	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	equipment does not	
		1400	Unsprinklered combustible	-	function, impact of design basis fir		
		1100	Chisprinkierea comoustiole	Touc mint, 1413/1112	Complete burnout of all equipme		
Assuming	operation of ins	stalled fire extinguishing ed	quipment, impact of fire upor	n:	this Fire Area results in loss of or		
	Plant operation:		1r,p		shutdown equipment circuits; re	•	
		None, no radiological ma	aterials present		of safe shutdown and redundant		
		Travel distance limits to			equipment are unaffected by fire		
Manu		Access via stairwells			Automatic logic control scheme (-	
	Property loss:				redundant signals) remains operable.		
	÷ *				, ,		

	Fire Area:	F3190	Description:	Stairwell A				
	Building:	Control	Applicable codes:	IBC; Reg Guide 1.189; N	VFPA 10, 14, 72, 101, 804			
		DCD Fig:	- -	Building code occupancy classification: F-1				
		9A.2-2			Electrical classification:	none		
		9A.2-3			ated divisional equipment or cables:			
		9A.2-4			ndant trains or equipment or cables:	none		
		9A.2-5	Surround	ed by fire barriers rated at:	3 hours			
]	Except:	basemat (non-rated)			
	of the followin		Fire De		Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	3190	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-2000				(outside stairwell				
4650				at each landing)				
9060								
		1	1	1 MI/ 2	A			
		negligible	Anticipated combustible lo	-	Assuming automatic & manual FP equipment does not			
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
A	anatian afin	stallad Ema autimousishina as	winnest immest of fine was		Complete burnout of all equipme			
	operation of instant operation:		uipment, impact of fire upo	II. 	this Fire Area affects no safety-r			
			storials prosont		equipment; all safety divisions an	na both reaundant		
Kauloi	Radiological release: None, no radiological materials present Life safety: Travel distance limits to EXITs meet NFPA 101				trains A and B are operable.			
Manu	Manual firefighting: Access via exterior and interior doors							
ivialiu	Property loss:		itterior uours					
	1 Toperty 1088.	regugible						

	Fire Area:	F3191	Description:					
	Building:		Applicable codes:		NFPA 10, 14, 72, 101, 804; ASME A			
		DCD Fig:	-	Bu	ilding code occupancy classification:			
		9A.2-2		Electrical classification: none				
		9A.2-3			elated divisional equipment or cables:			
		9A.2-4			lundant trains or equipment or cables:	none		
		9A.2-5	Surround	ed by fire barriers rated a				
			_	Excep	t: basemat (non-rated); elevator de	oors (1.5 hr rated)		
Ci-4:	- C 41 C- 11:	- D	Fire De	taatian	Pina Cymraea	ai au		
EL	of the followin Room #	Potential Combustibles	Primary		Fire Suppres Primary	Ĭ		
EL	Koom #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	3191	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)		
9060	3405	Class IIIB lubricants Cable insulation Electrical equipment			CO2 fire extinguisher (outside room)			
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fir			
P Radiol	lant operation: ogical release: Life safety:		quipment, impact of fire upon aterials present EXITs meet NFPA 101	ŕ	Complete burnout of all equipmenthis Fire Area affects no safety-reequipment; all safety divisions artrains A and B are operable.	ent and cables within elated or safe shutdown		
1.14114	Property loss:							
	5F 7 -000.				L			

	Fire Area	: F3192	Description:	Stairwell B				
	Building	: Control	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804			
		DCD Fig:		Bu	ilding code occupancy classification:	F-1		
		9A.2-2	Electrical classification: none					
		9A.2-3	Safety-related divisional equipment or cables: none					
		9A.2-4			undant trains or equipment or cables:	none		
		9A.2-5	Surround	ed by fire barriers rated at				
				Except: basemat (non-rated)				
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppres	ssion		
EL	Room#	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400 -2000 4650 9060	3192	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers		
7000		negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir			
			₁	,	Complete burnout of all equipme			
			quipment, impact of fire upo	n:	this Fire Area affects no safety-re			
	lant operation				equipment; all safety divisions ar	nd both redundant		
Radiol		None, no radiological ma			trains A and B are operable.			
		Travel distance limits to						
Manu		Access via exterior and i	interior doors					
	Property loss	: Negligible						

	Fire Area:	F3270	Description:	Main Control Roon	n Complex			
	Building:	Control	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804					
		DCD Fig:	Building code occupancy classification: B					
		9A.2-3	Electrical classification: none					
		9A.2-4		Safety-rel	ated divisional equipment or cables	s: none		
			N		indant trains or equipment or cables			
			Surrounded by	y fire barriers rated at:	3 hours	-		
			interio	r fire barriers rated at:	1 hour, around room 3275 Main	Control Room		
	of the followir		Fire Detection		Fire Suppre	•		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-2000	below	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
	access floor			(outside stairwells		(in nearby stairwells)		
	3274	Cable insulation		at each landing)				
	3276	Class A combustibles						
-1400	3275	Cable insulation						
	3270	Electrical equipment			Hose racks	ABC fire		
	3271	Class A combustibles			(in nearby stairwells)	extinguishers		
	3273	Filter media						
	3274	Class IIIA lubricants						
	3204, 3205							
	3201, 3202	Class A combustibles	Area-wide photoelectric					
	above ceiling	Insulation	Area-wide ionization					
			.					
		< 1400	Anticipated combustible load, N		Assuming automatic & manual FI			
		1400	Unsprinklered combustible load	l limit, MJ/m2	function, impact of design basis fi			
					Complete burnout of all equipm			
Assuming	operation of in	stalled fire extinguishing eq	uipment, impact of fire upon:	7	this Fire Area affects MCR cont			
			rip; outage required to restore	4	of safe shutdown equipment. O			
Radio		None, no radiological ma		4	reactor before evacuating MCR			
		Travel distance limits to	EXITs meet NFPA 101	4	shutdown control transferred to			
Manu		Access via stairwells		4	Shutdown Panel (located in sepa			
	Property loss:	Significant		J	and F1323). All safety-related c			
					redundant circuits are optically			
					area, so all safety divisional equ			
					trains A and B are operable. Se	e also section 9A.6.		
İ								

	Fire Area:	F3302	Description:	Non-1E Electrical	Description: Non-1E Electrical				
	Building:	Control	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804						
		DCD Fig:	Building code occupancy classification: F-1						
		9A.2-4	Electrical classification: none						
		9A.2-5			elated divisional equipment or cable				
					undant trains or equipment or cable	s: none			
			Surround	led by fire barriers rated a					
			_	Excep	t: none				
Consisting	g of the following	g Rooms:	Fire De	etection	Fire Suppre	ession			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
4650	3302 below access floor	Cable insulation	Area-wide ionization	Manual pulls (outside stairwell	CO2 fire extinguishers	Hose racks (in nearby stairwells)			
5250	3302	Electrical equipment Cable insulation		at each landing)					
		< 1400	Anticipated combustible lo	pad, MJ/m2	Assuming automatic & manual F	P equipment does not			
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis f				
Radio	Plant operation: ological release: Life safety:	None None, no radiological material distance limits to Access via stairwells	quipment, impact of fire upo aterials present		Complete burnout of all equipments Fire Area affects no safety-equipment; all safety divisions a trains A and B are operable.	nent and cables within related or safe shutdown			

Table 9A5-4, Turbine Building

	Fire Area:	F4100	Description:	Turbine Equipment					
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	FPA 10, 12, 13, 14, 15, 72, 90A, 49	7, 101, 804			
		DCD Fig:			lding code occupancy classification:				
		9A.2-12			Electrical classification:	none			
		9A.2-13		Safety-rel	ated divisional equipment or cables:	I, II, III, IV			
		9A.2-14	Nonsafety-related redundant trains or equipment or cables: none						
		9A.2-15	Surrounded by fire barriers rated at: 3 hours						
		9A.2-16	Except: basemat (non-rated); elevator doors (1.5 hr rated); exterior underg						
		9A.2-17		walls (non-rated); exterior walls above EL 12000 (non-rated)					
Consisting	of the fellowing Deems		Eiro Do	etection	Fire Suppressi	on			
EL	of the following Rooms: Room #	Potential Combustibles	Primary	Backup	Primary	on Backup			
EL	KUUIII #	I otential Compustibles	riillary	Баскир	Filliary	Баскир			
-1400	4180, 4181, 4182	Class IIIB lubricants	Area-wide photoelectric	Manual pulls	ABC fire extinguishers	Hose racks			
	41F1A,41F1B,41F1C,	-1	Area-wide ionization	(outside stairwell		(in nearby			
	41F1D,41F1E,41F1F,			at each landing)		stairwells)			
	41F1G, 41F0, 41F3,								
	41F4, 41F5, 41F6,								
	41F7, 41F8, 41F9								
	4100, 4101, 4102	Class IIIB lubricants	1						
		Cable insulation							
	4105, 4107, 4199	Filter media							
	4106, 4184	Class IIIB lubricants	Suppression flowswitch		Wet-pipe sprinkler				
	4185, 4186	Cable insulation	**		16.3 L/min per m2				
4650	4205, 4206, 4207				over most remote 465 m2				
	4202, 4203								
	4281, 4282,	< 28 m3 Hydrogen	Area-wide spot heat		ABC fire extinguishers				
		Class IIIB lubricants							
	4201, 4204, 4280,	Class IIIB lubricants	Area-wide ionization						
	4284, 4290, 4291,	Cable insulation							
	42F1A,42F1B,42F1C,								
	42F1D,42F1E,42F1F,								
	42F1G, 42F1H, 4283,								
	42F2A,42F2B,42F2C,								
	42F2D,42F2E,42F2F,								
	42F2G, 42F2H,								
	42F4, 4295								

	Fire Area:	F4100 (continued)	Description:	Turbine Equipment (con	tinued)			
	Building:	Turbine	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 12, 13, 14, 15, 72, 90A, 497, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-12			Electrical classification:	none		
		9A.2-13		Safety-rel	ated divisional equipment or cables:	I, II, III, IV		
		9A.2-14		Nonsafety-related redu	ndant trains or equipment or cables:	none		
		9A.2-15		ed by fire barriers rated at:				
		9A.2-16	Except: basemat (non-rated); elevator doors (1.5 hr rated); exterior underground					
		9A.2-17	walls (non-rated); exterior walls above EL 12000 (non-rated)					
	of the following Rooms:	T=	Fire De		Fire Suppressi			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	1200 1201		G	16 1 11				
4650	4200, 4294	Electrical equipment	Suppression flowswitch	Manual pulls	Dry-pipe sprinkler	Hose racks		
		Cable insulation		(outside stairwell	8.1 L/min per m2	(in nearby		
		Class IIIB lubricants		at each landing)	over most remote 181 m2	stairwells)		
	40770	Transient combustibles			1000			
7650	42F0	Class IIIB lubricants	Area-wide ionization		ABC fire extinguishers			
		Cable insulation						
8200	4293							
8200	4293 (end of tunnel)	1	Suppression flowswitch		Dry-pilot deluge			
	4293 (end of tunner)		Suppression Howswitch					
					37.2 L/min per meter			
12000	4300, 4301, 4302,	Class IIIB lubricants	Area-wide ionization		(water curtain) ABC fire extinguishers			
12000	4303, 4304, 4305,	Cable insulation	Ai ca-wide ionization		ADC III e extinguishers			
	4306, 4309, 4383,	Filter media						
	4300, 4309, 4383,	ritter media						
	4380, 4381, 4382	Cable insulation	Suppression flowswitch		Wet-pipe sprinkler			
16000	4391, 4392	Class IIIB lubricants	Suppression nowswitch		16.3 L/min per m2			
23500		Class IIID lubi icalits			over most remote 465 m2			
20000	4390	1			over most remote 405 m2			
20000	4405 curbed area							
	rest of 4405	Class IIIB lubricants	Area-wide ionization		ABC fire extinguishers	1		
	4400, 4401, 4402	Cable insulation	121 CH THE TOTAL CHILD		1250 me caemguioners			
	4403, 4404	Filter media						

	Fire Area:	F4100 (continued)	Description:	Turbine Equipment (con	tinued)		
	Building:	Turbine			FPA 10, 12, 13, 14, 15, 72, 90A, 49	7, 101, 804	
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-12	Electrical classification: none				
		9A.2-13			ated divisional equipment or cables:		
		9A.2-14			ndant trains or equipment or cables:	none	
		9A.2-15	Surround	ed by fire barriers rated at:	3 hours		
		9A.2-16	Except: basemat (non-rated); elevator doors (1.5 hr rated); exterior underground				
		9A.2-17		walls (non-rated); exteri	or walls above EL 12000 (non-rate	ed)	
	of the following Rooms:		Fire De		Fire Suppressi		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
20000	H2 seal oil unit	Class IIIB lubricants	Suppression flowswitch	Manual pulls	Dry-pilot deluge	Hose racks	
		< 11,000 L Class IIIA		(outside stairwells	12.2 L/min per m2	(in nearby	
		seal oil		at each landing)		stairwells)	
28000	4580 above ceiling	Cable insulation	Area-wide ionization		ABC fire extinguishers		
	4500, 4501, 4502	Class IIIB lubricants					
	4503, 4504, 4580	Cable insulation					
	4581, 4582, 4583	Filter media					
	4505, 4508, 4509		Area-wide linear heat				
	4506, 4507		Area-wide spot heat				
	Turbine-generator	Class IIIB lubricants	Spot heat over each		Automatic preaction spray		
	bearings		bearing		16.3 L/min per m2		
					over entire area		
	Generator housing	< 56 m3 Hydrogen	Process indication		Manual low pressure CO2	CO2 fire	
	Exciter housing	1	Area-wide ionization		30% concentration	extinguishers	
	Ü				two-shot volume		
33000	4600, 4602	Class IIIB lubricants	Area-wide ionization		ABC fire extinguishers	Hose racks	
		Cable insulation				(in nearby	
43500	4505	Filter media				stairwells)	
54000							

Fire Area: F4100 (continued)	Description: Turbine Equipment (continued)	
Building: Turbine	Applicable codes: IBC; Reg Guide 1.189	9; NFPA 10, 12, 13, 14, 15, 72, 90A, 497, 101, 804	
DCD Fig:	Building code occupancy classification: F-1		
9A.2-12		Electrical classification: none	
9A.2-13		-related divisional equipment or cables: I, II, III, IV	
9A.2-14		edundant trains or equipment or cables: none	
9A.2-15	Surrounded by fire barriers rated		
9A.2-16		elevator doors (1.5 hr rated); exterior underground	
9A.2-17	walls (non-rated); ex	terior walls above EL 12000 (non-rated)	
	Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 npact of fire upon: required prior to restart g	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable. Fire-related failure of safety-related instrumentaion may cause reactor scram or containment isolation. See	
Property loss: Significant		Sections 9A.6.4.1 and 9A.6.4.2.	

Manu	•	Travel distance limits to Access via stairwells Moderate	EXITs meet NFPA 101		redundant trains A and B are ope	erable.			
P	lant operation: ogical release:	Turbine trip; outage red Contained within buildi	ng	n:	Complete burnout of all equipme this Fire Area affects up to all for pumps, but affects no safety-related divisional equipment; all safety d	ır redundant FW ted or safe shutdown ivisions and both			
		> 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fire	e on safe shutdown:			
	4292	Filter media None	Area-wide ionization						
	4103	Class IIIB lubricants Cable insulation	Area-wide ionization						
	7107	Cable insulation < 28 m3 Hydrogen	21y phot detection						
-1400 4183 4104		Class IIIB lubricants Cable insulation Class IIIB lubricants	Area-wide photoelectric Dry-pilot detection	Area-wide spot heat	Preaction sprinkler 12.2 L/min per m2 over most remote 302 m2	Hose racks (in nearby stairwells)			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
	onsisting of the following Rooms:		Fire De		Fire Suppress				
			J						
		9A.2-15 9A.2-16	Surround	Surrounded by fire barriers rated at: 3 hours Except: basemat (non-rated)					
		9A.2-14 9A.2-15	C		rated at: 3 hours				
		9A.2-13	Safety-related divisional equipment or cables: none						
		9A.2-12	7	Dui	Electrical classification:				
	Building:	Turbine DCD Fig:	Applicable codes:		NFPA 10, 13, 14, 72, 101, 804 lding code occupancy classification:	E 1			
	Fire Area:			Feedwater Pumps					

	Fire Area:	F4108	Description:	Charcoal Adsorbers		
		Turbine			NFPA 10, 14, 15, 72, 101, 804	
		DCD Fig:			ilding code occupancy classification:	F-1
		9A.2-12			Electrical classification:	
		9A.2-13		Safety-re	elated divisional equipment or cables:	none
		9A.2-14			undant trains or equipment or cables:	
		9A.2-15	Surround	led by fire barriers rated a		
				Excep	t: basemat (non-rated)	
	of the following			etection	Fire Suppress	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-1400	Adsorber	Charcoal	Process indication	Manual pulls	Internal manual spray in each	Hose racks
	Adsorber A			(outside Elev	adsorber vessel	(in nearby stairwell)
	Adsorber B			at each landing)		
	Adsorber C					
	Adsorber D					
	Adsorber E					
	Adsorber F					
	Adsorber G					
	Adsorber H					
	4108	Class IIIB lubricants	Area-wide ionization		ABC fire extinguishers	
		Cable insulation			(outside Elev	
12000	4386				at each landing)	
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP	equipment does not
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	e on safe shutdown:
			_ -		Complete burnout of all equipme	nt and cables within
Assuming of	operation of in	stalled fire extinguishing e	equipment, impact of fire upo	n:	this Fire Area affects no safety-re	lated or safe shutdowi
P	lant operation:	None			divisional equipment; all safety d	ivisions and both
Radio		Contained within build			redundant trains A and B are ope	
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		1	
Manu	al firefighting:	Access via stairwells an	d interior doors			
	Property loss:	Moderate				
				-		

	Fire Area	: F4190	Description:	Elevator A				
	Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1		
		DCD Fig:		Ві	uilding code occupancy classification	F-1		
		9A.2-12	1		Electrical classification:	none		
		9A.2-13	Safety-related divisional equipment or cables: none					
		9A.2-14		Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-15	Surround	ed by fire barriers rated a	at: 3 hours			
		9A.2-16		Excep	ot: basemat (non-rated); elevator d	oors (1.5 hr rated)		
		9A.2-17		_				
			_					
onsisting	of the following		Fire De	tection	Fire Suppres	ssion		
EL Room # Potential Combustibles		Primary	Backup	Primary	Backup			
-1400	4190	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks		
		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell		
				at each landing)	at each landing)	,		
				0,				
36000	4680	Class IIIB lubricants	1		CO2 fire extinguisher			
		Cable insulation			(outside room)			
		Electrical equipment						
		•				•		
		< 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fir			
			-	ŕ	Complete burnout of all equipme			
ssuming o	peration of in	stalled fire extinguishing e	quipment, impact of fire upor	n:	this Fire Area affects no safety-r			
	lant operation				divisional equipment; all safety of			
		None, no radiological m	aterials present		redundant trains A and B are op			
P	ogical release							
P		Travel distance limits to	EXITs meet NFPA 101					
P. Radiol	Life safety	Travel distance limits to						
P: Radiol	Life safety	Travel distance limits to Access via stairwells and						

Fire.	Area: F4191	Description:	Stairwell A					
Buil	ding: Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804				
	DCD Fig:		Bu	ilding code occupancy classification:	F-1			
	9A.2-12			Electrical classification:	none			
	9A.2-13		Safety-re	elated divisional equipment or cables:	none			
	9A.2-14		Nonsafety-related redundant trains or equipment or cables: none					
	9A.2-15	Surround	Surrounded by fire barriers rated at: 3 hours					
	9A.2-16		Excep	t: basemat (non-rated)				
	9A.2-17							
Consisting of the fol	lowing Rooms:	Fire De	etection	Fire Suppress	sion			
EL Room			Backup	Primary	Backup			
ZZ ROOM		1 11111111	zwinp	111111111	Swing			
-1400 419 4650 12000	1 None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers			
20000 28000 33000 36000								
	negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis firm	e on safe shutdown:			
Plant opera Radiological rel Life si Manual firefigl	of installed fire extinguishing ation: None lease: None, no radiological afety: Travel distance limits nting: Access via exterior an loss: Negligible	to EXITs meet NFPA 101	n:	Complete burnout of all equipmenthis Fire Area affects no safety-redivisional equipment; all safety dredundant trains A and B are open	elated or safe shutdown livisions and both			

	Fire Area	: F4192	Description:	Elevator B			
	Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1	
		DCD Fig:		Ві	uilding code occupancy classification	n: F-1	
		9A.2-12			Electrical classification	none	
		9A.2-13	Safety-related divisional equipment or cables: none				
		9A.2-14		Nonsafety-related rec	dundant trains or equipment or cables	: none	
		9A.2-15	Surround	ed by fire barriers rated a	at: 3 hours		
		9A.2-16		Excep	ot: basemat (non-rated); elevator o	loors (1.5 hr rated)	
		9A.2-17					
Consisting	of the followi	ng Rooms:	Fire De	etection	Fire Suppre	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-1400	4192	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev	ABC fire extinguishers (outside Elev	Hose racks (in nearby stairwell)	
57000	4681	Class IIIB lubricants Cable insulation Electrical equipment	_		CO2 fire extinguisher (outside room)		
		< 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual Fl function, impact of design basis fi Complete burnout of all equipm	re on safe shutdown:	
P	lant operation	: None	quipment, impact of fire upo	n:	this Fire Area affects no safety- divisional equipment; all safety	related or safe shutdowi divisions and both	
Radiol		None, no radiological m			redundant trains A and B are o	perable.	
		Travel distance limits to					
Manu	al firefighting Property loss	Access via stairwells and	d hoistway doors				
	11	ul Nicoliosik Ic					

	Fire Area:	F4193	Description:	Stairwell R			
		Turbine			NFPA 10, 14, 72, 101, 804		
	zanang.	DCD Fig:	Building code occupancy classification: F-1				
		9A.2-12]	Electrical classification: none			
		9A.2-13	Safety-related divisional equipment or cables: none				
		9A.2-14	Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-15	Surround	ed by fire barriers rated a	t: 3 hours		
		9A.2-16		Excep	t: basemat (non-rated)		
	9A.2-17						
	of the following		Fire De		Fire Suppres		
EL	EL Room # Potential Combustibles		Primary	Backup	Primary	Backup	
-1400 4650	4193	None	Area-wide ionization	Manual pulls (outside stairwell	Hose racks	ABC fire extinguishers	
12000				at each landing)			
20000				(g)			
28000							
33000							
43500							
54000							
57000							
		negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme	e on safe shutdown:	
Pl	lant operation:		this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both				
Kadiolo		None, no radiological ma			redundant trains A and B are op	erable.	
Manua		Travel distance limits to Access via exterior and i					
	Property loss:		11101 101 1				
	1 Topcity 1088.	regugible					

	Fire Area	: F4194	Description:	Elevator C				
	Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1		
	_	DCD Fig:		Ві	uilding code occupancy classification	n: F-1		
		9A.2-12	7		Electrical classification	: none		
		9A.2-13	Safety-related divisional equipment or cables: none					
		9A.2-14		Nonsafety-related rec	dundant trains or equipment or cables	none		
		9A.2-15	Surrounded by fire barriers rated at: 3 hours					
		9A.2-16		Excep	ot: basemat (non-rated); elevator of	loors (1.5 hr rated)		
		9A.2-17						
oneisting (of the followi	ng Rooms.	Fire De	tection	Fire Suppre	ecion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
	TCOOIII II	1 otential compastions	1 minuty	Вискир	Immury	Бискир		
-1400	4194	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks		
		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)		
				at each landing)	at each landing)	(
					8)			
31000	4682	Class IIIB lubricants	7		CO2 fire extinguisher			
		Cable insulation			(outside room)			
		Electrical equipment			, in the second of			
		< 700	7 A4: .:	- 1 MI/2	A1.51):		
			Anticipated combustible lo	-	Assuming automatic & manual Fl			
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fi			
	anatian afin	estallad fina autinaviahina	animum ant imma at af fina un a		Complete burnout of all equipm			
	peration of it lant operation		equipment, impact of fire upor	11.	this Fire Area affects no safety-			
		None, no radiological n	natorials prosont		divisional equipment; all safety			
Kaulol			o EXITs meet NFPA 101		redundant trains A and B are o	perable.		
Manue		: Access via stairwells an						
		Negligible	u noistway uoois					

	rife Afea.	F4195	Description: Stairwell C					
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804			
		DCD Fig:		Ви	ailding code occupancy classification:	: F-1		
		9A.2-12	Electrical classification: none					
		9A.2-13	Safety-related divisional equipment or cables: none					
		9A.2-14	Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: 3 hours					
		9A.2-15						
		9A.2-16		Excep	t: basemat (non-rated)			
		9A.2-17]					
Consisting	of the following	g Rooms:	Fire De	etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-1400 8200 12000 20000	4195	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers		
28000								
31000		negligible 700	Anticipated combustible lo Unsprinklered combustible	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipme	re on safe shutdown: ent and cables within		
31000 Assuming of		700 stalled fire extinguishing ed	-1 -	e load limit, MJ/m2	function, impact of design basis fin Complete burnout of all equipme this Fire Area affects no safety-r	re on safe shutdown: ent and cables within elated or safe shutdown		
31000 Assuming o	lant operation:	700 stalled fire extinguishing ed None	Unsprinklered combustible quipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipmenthis Fire Area affects no safety-redivisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdown divisions and both		
31000 Assuming o	lant operation: ogical release:	stalled fire extinguishing ed None None, no radiological ma	Unsprinklered combustible quipment, impact of fire uponaterials present	e load limit, MJ/m2	function, impact of design basis fin Complete burnout of all equipme this Fire Area affects no safety-r	re on safe shutdown: ent and cables within related or safe shutdown divisions and both		
31000 Assuming of P	lant operation: ogical release: Life safety:	700 stalled fire extinguishing ed None None, no radiological materials and the state of the s	Unsprinklered combustible quipment, impact of fire upon aterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipmenthis Fire Area affects no safety-redivisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdown divisions and both		
31000 Assuming of P	lant operation: ogical release: Life safety:	700 stalled fire extinguishing ed None None, no radiological material distance limits to Access via exterior and in	Unsprinklered combustible quipment, impact of fire upon aterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipmenthis Fire Area affects no safety-redivisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdown divisions and both		

	Fire Area	: F4196	Description:	Elevator D					
	Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1			
	_	DCD Fig:		Ві	uilding code occupancy classification	n: F-1			
		9A.2-12			Electrical classification	: none			
		9A.2-13	Safety-related divisional equipment or cables: none						
		9A.2-14		Nonsafety-related redundant trains or equipment or cables: none					
		9A.2-15	Surround	Surrounded by fire barriers rated at: 3 hours					
		9A.2-16		Excep	ot: basemat (non-rated); elevator of	loors (1.5 hr rated)			
		9A.2-17							
oneisting (of the followi	ng Rooms.	Fire De	tection	Fire Suppre	ecion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
LL	TCOOIII II	1 otential compastions	Timary	Бискир	Immury	Бискир			
-1400	4196	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks			
		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)			
				at each landing)	at each landing)	(
31000	4683	Class IIIB lubricants			CO2 fire extinguisher				
		Cable insulation			(outside room)				
		Electrical equipment							
		< 700	Anticinated combustible to	od MI/m2	Agguering outomotic & manual El) agricument de se met			
		700	Anticipated combustible lo	-	Assuming automatic & manual Fl				
		/00	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis for				
couming o	maration of ir	octallad fira aytinguiching a	equipment, impact of fire upon	n:	Complete burnout of all equipments fire Area affects no safety-				
	lant operation		equipment, impact of the upon	11.	divisional equipment; all safety				
		None, no radiological n	naterials present		redundant trains A and B are o				
Radion			o EXITs meet NFPA 101		Toumulant trains A and B are o	pei abie.			
Manus		Access via stairwells an							
	Property loss		a noiseway avois						
	Troperty 1033	. It resulting							

	Fire Area:	F4197	Description:	Stairwell D					
	Building:	Turbine	Applicable codes:		NFPA 10, 14, 72, 101, 804				
		DCD Fig:	_	Вι	uilding code occupancy classification:				
		9A.2-12	Electrical classification: none						
		9A.2-13		Safety-related divisional equipment or cables: none					
		9A.2-14	Nonsafety-related redundant trains or equipment or cables: none						
		9A.2-15	Surround	Surrounded by fire barriers rated at: 3 hours					
		9A.2-16		Excep	t: basemat (non-rated)				
		9A.2-17	_						
Consisting of	of the followir		Fire De		Fire Suppres	ssion Backup			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-1400 4650 12000	4197	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers			
20000 28000 31000									
		negligible	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual FP	equipment does not			
		700	Unsprinklered combustible	5	function, impact of design basis fir	* *			
Pl	lant operation:	None	quipment, impact of fire upor	ŕ	Complete burnout of all equipme this Fire Area affects no safety-r divisional equipment; all safety of	ent and cables within elated or safe shutdown			
	Life safety:	None, no radiological m Travel distance limits to	EXITs meet NFPA 101		redundant trains A and B are op	erable.			
		Access via exterior and Negligible	interior doors						

	Fire Area	: F4250	Description:	Reactor Component Co	oling Water A				
	Building	: Turbine	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	_	Building code occupancy classification: F-1					
		9A.2-13	Electrical classification: none						
		9A.2-14		Safety-related divisional equipment or cables: none					
					undant trains or equipment or cables:	A			
			Surround	led by fire barriers rated a	t: 3 hours				
				Excep	t: none				
			_						
Consisting	of the followi		Fire De	etection	Fire Suppress				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
4650	4250	Electrical equipment Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	CO2 fire extinguishers			
P Radiol	Plant operation logical release Life safety	: None : None, no radiological ma : Travel distance limits to : Access via stairwells		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area affects only redund and no safety-related or safe shut equipment; all safety division and equipment are operable.	e on safe shutdown: nt and cables within lant train A equipment down divisional			

	Fire Area	a: F4260	Description: Reactor Component Cooling Water B					
	Building	g: Turbine	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-13	Electrical classification: none					
		9A.2-14	Safety-related divisional equipment or cables: none					
			Nonsafety-related redundant trains or equipment or cables: B					
			Surrounded by fire barriers rated at: 3 hours					
				Excep	t: none			
Consisting	of the follow	ing Rooms:	Fire De	etection	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
	TCOOM #	Totelitar Compastiones	Timury	Бискир	Timury	Бискир		
4650	4260	Electrical equipment Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	CO2 fire extinguishers		
P Radiol	Plant operation logical release Life safety al firefighting	< 700 700 Tool nstalled fire extinguishing ed None None, no radiological may Travel distance limits to g: Access via stairwells s: Moderate	aterials present	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fit Complete burnout of all equipm this Fire Area affects only redun and no safety-related or safe shu equipment; all safety division an equipment are operable.	re on safe shutdown: ent and cables within dant train B equipment tdown divisional		

	Fire Area:	F4307	Description:	Turbine EHC			
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 13, 14, 15, 72, 101, 804		
		DCD Fig:	_	Bu	ilding code occupancy classification:	F-1	
		9A.2-14	Electrical classification: none				
					elated divisional equipment or cables:		
			Nonsafety-related redundant trains or equipment or cables: none				
			Surround	ed by fire barriers rated a	t: 3 hours		
				Excep	t: none		
Consisting	of the followir	ng Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
				<u> </u>			
12000	4307	<3,500 L Class IIIA hydraulic oil Cable insulation Class IIIB lubricants	Suppression flowswitch	Manual pulls (outside stairwells at each landing)	Dry-pilot deluge 12.2 L/min per m2	Hose racks (in nearby stairwells)	
P	lant operation:	Turbine trip; restoration	Anticipated combustible lo Unsprinklered combustible quipment, impact of fire upon required prior to restart	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme this Fire Area affects no safety-redivisional equipment; all safety d	e on safe shutdown: ent and cables within elated or safe shutdown livisions and both	
	Life safety	None, no radiological m Travel distance limits to	EXITs meet NFPA 101		redundant trains A and B are op	erable.	
Manu		Access via interior door					
	Property loss	Moderate					
i							

9A.	urbine CD Fig: A.2-14 A.2-15		Bu Safety-re		F-1 none					
9A.	A.2-14		Bu Safety-re	ilding code occupancy classification: Electrical classification: lated divisional equipment or cables:	F-1 none					
		Surrounde		lated divisional equipment or cables:						
9A.	A.2-15	Surrounde			nono					
		Surrounde	Nonsafety-related red		Safety-related divisional equipment or cables: none					
		Surrounde	Nonsafety-related redundant trains or equipment or cables: none							
			Surrounded by fire barriers rated at: 3 hours							
		Except: none								
Consisting of the following Ro	Rooms:	Fire De	tection	Fire Suppres	sion					
EL Room# Pot	otential Combustibles	Primary	Backup	Primary	Backup					
lub	50,000 L Class IIIB bricants able insulation	Suppression flowswitch	Manual pulls (outside stairwells at each landing)	Dry-pilot foam-water deluge 16.3 L/min per m2	Hose racks (in nearby stairwells)					
Radiological release: No	urbine trip; restoration one, no radiological ma ravel distance limits to	required prior to restart	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme this Fire Area affects no safety-redivisional equipment; all safety design redundant trains A and B are op	e on safe shutdown: ent and cables within elated or safe shutdown livisions and both					

	Fire Area	: F4350	Description:	Instrument Air A				
	Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804			
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-14	Electrical classification: none					
			Safety-related divisional equipment or cables: none					
					undant trains or equipment or cables:	A		
			Surround	led by fire barriers rated at	3 hours			
				Except	none			
			J					
Consisting	onsisting of the following Rooms:		Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
12000	4350	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	ABC fire extinguishers		
P Radiol	Plant operation logical release Life safety	None None, no radiological material distance limits to Access via stairwells		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area affects only redund and no safety-related or safe shut equipment; all safety division and equipment are operable.	e on safe shutdown: nt and cables within lant train A equipment down divisional		

Fire Area	: F4360	Description:	Instrument Air B				
Building	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804			
	DCD Fig:		Bui	ilding code occupancy classification:	F-1		
	9A.2-14		Electrical classification: none				
		Safety-related divisional equipment or cables: none					
					В		
		Surround					
			Except	none			
		_					
of the following		Fire De	etection	Fire Suppress	sion		
Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4360	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	ABC fire extinguishers		
	< 700 700			function, impact of design basis fire	e on safe shutdown:		
lant operation ogical release	None None, no radiological ma	aterials present	and no safety-related or safe shutdown divis equipment; all safety division and redundan		lant train B equipment down divisional		
	Poperation of in lant operation ogical release	9A.2-14 of the following Rooms: Room # Potential Combustibles 4360 Cable insulation Class IIIB lubricants < 700 700 operation of installed fire extinguishing edunt operation: One Ogical release: None, no radiological mi	Building: Turbine DCD Fig: 9A.2-14 Surround of the following Rooms: Room # Potential Combustibles 4360 Cable insulation Class IIIB lubricants Area-wide ionization Class IIIB combustible of the following Rooms: Area-wide ionization Unsprinklered combustible of the following Rooms: Area-wide ionization Unsprinklered combustible of the primary Area-wide ionization Of the following Rooms: Area-wide ionization Unsprinklered combustible of the primary Area-wide ionization Of the following Rooms: Area-wide ionization Of	Building: Turbine DCD Fig: 9A.2-14 Safety-re Nonsafety-related red Surrounded by fire barriers rated at Except of the following Rooms: Room # Potential Combustibles 4360 Cable insulation Class IIIB lubricants Area-wide ionization Manual pulls (outside stairwells at each landing) Articipated combustible load, MJ/m2 T00 Unsprinklered combustible load limit, MJ/m2 operation of installed fire extinguishing equipment, impact of fire upon: lant operation: None Ogical release: None, no radiological materials present	Building: Turbine DCD Fig: 9A.2-14 Safety-related divisional equipment or cables: Nonsafety-related redundant trains or equipment or cables: Nonsafety-related redundant trains or equipment or cables: Surrounded by fire barriers rated at: Surrounded by fire		

	Fire Area:	F4550	Description:	Chilled Water A				
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASHRAI	E 15		
		DCD Fig:	_	Building code occupancy classification: F-1				
		9A.2-16	Electrical classification: none					
		9A.2-17		Safety-re	elated divisional equipment or cables:	none		
					undant trains or equipment or cables:	A		
			Surround	ed by fire barriers rated a	t: 3 hours			
				Except: none				
			J					
Consisting (Consisting of the following Rooms:		Fire De	etection	Fire Suppress	ion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
28000	4550	Electrical equipment	Area-wide ionization	Manual pulls	Hose racks	ABC fire		
20000	4330	Cable insulation Class IIIB lubricants	Area-wide ionization	(outside stairwells at each landing)	(in nearby stairwells)	extinguishers		
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP e	equipment does not		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire			
Assuming o	operation of ins	stalled fire extinguishing ed	quipment, impact of fire upo	n:	Complete burnout of all equipmenthis Fire Area affects only redund			
	lant operation:				and no safety-related or safe shute			
		None, no radiological ma	aterials present		equipment; all safety division and redundant train B			
		Travel distance limits to	EXITs meet NFPA 101		equipment are operable.			
Manua	al firefighting:	Access via stairwells			1			
	Property loss:	Moderate						
				-				

	Fire Area	: F4560	Description:	Chilled Water B			
	Building	: Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASHRAI	E 15	
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-16	Electrical classification: none				
		9A.2-17		Safety-re	elated divisional equipment or cables:	none	
					undant trains or equipment or cables:	В	
			Surround	led by fire barriers rated at	t: 3 hours		
				Except	t: none		
]				
Consisting	onsisting of the following Rooms:		Fire De	etection	Fire Suppress	ion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
28000	4560	Electrical equipment Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	ABC fire extinguishers	
P. Radiol	lant operation logical release Life safety al firefighting			e load limit, MJ/m2	Assuming automatic & manual FP of function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund and no safety-related or safe shute equipment; all safety division and equipment are operable.	on safe shutdown: nt and cables within ant train B equipment down divisional	

	Fire Area:	F4651	Description:	Water Surge Tanks A				
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 72, 101, 804			
		DCD Fig:	_	Bui	ilding code occupancy classification:			
		9A.2-17	Electrical classification: none					
					lated divisional equipment or cables:			
					undant trains or equipment or cables:	A		
			Surround	led by fire barriers rated at				
				Except: none				
Consisting	of the following		Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
33000	4651	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells	Hose racks (in nearby stairwells)	ABC fire extinguishers		
				at each landing)				
		< 700	Anticipated combustible lo	•	Assuming automatic & manual FP	* *		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire			
		. 11 1 0			Complete burnout of all equipme			
			uipment, impact of fire upo	n: I	this Fire Area affects only redund			
	lant operation:		4 • 1		and no safety-related or safe shut			
Kadiol		None, no radiological ma			equipment; all safety division and	i redundant train B		
Mossy		Travel distance limits to Access via stairwells	EATTS MEET NFFA 101		equipment are operable.			
iviáliu	Property loss:							
	Troperty 1088.	MILLIOI						

	Fire Area	: F4661	Description:	Water Surge Tanks B			
	Building	: Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:	_	Bu	ilding code occupancy classification:	F-1	
		9A.2-17	Electrical classification: none				
				2	lated divisional equipment or cables:		
					undant trains or equipment or cables:	В	
			Surround	led by fire barriers rated at	3 hours		
				Except	none		
			_				
Consisting	Consisting of the following Rooms:		Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
33000	4661	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks (in nearby stairwells)	ABC fire extinguishers	
P Radiol	Plant operation logical release Life safety	None None, no radiological material Travel distance limits to Access via stairwells		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area affects only redund and no safety-related or safe shut equipment; all safety division and equipment are operable.	e on safe shutdown: nt and cables within lant train B equipment down divisional	

Table 9A.5-5, Radwaste Building

	Fire Area:	F6101		Description: Radwaste Ha	andling Equipment			
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 90A, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-20			Electrical classification:			
		9A.2-21		Safety-related di	visional equipment or cables:	none		
		9A.2-22	N	Nonsafety-related redundant t	rains or equipment or cables:	none		
		9A.2-23	Surrou	nded by fire barriers rated at	3 hours			
				Except: basemat (no	n-rated); exterior undergro	ound walls (non-rated);		
Consisting	g of the following Rooms:		Fi	re Detection	Fire Su	ppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350	6100, 6101, 6102, 6103, 6104,	Class IIIB lubricants	Suppression	Manual pulls	Wet-pipe sprinkler	Hose racks		
	6105, 6106, 6107, 6108, 6109,	Cable insulation	flowswitch	(outside stairwell	8.1 L/min per m2	(in nearby stairwells)		
	6150, 6151, 6160, 6161,	Transient combustibles		at each landing)	over 140 m2	ABC fire extinguishers		
	6171, 6172, 6180, 6181, 6182,	Class A combustibles						
	6183, 6184, 6185,							
	6186, 6187, 6188, 6189							
-2350	6200, 6201, 6280, 6281, 6282,							
	6283, 6284, 6285, 6286							
4650	6381							
						1		
	Charcoal Filter	Charcoal	HVAC		Internal manual spray			
			temperature					
			indication					
			1					
		> 700	Anticipated combus		Assuming automatic & man			
		700	Unsprinklered com	bustible load limit, MJ/m2	function, impact of design b			
					_	quipment and cables within		
Assuming	operation of installed fire exting				this Fire Area affects no sa			
		None; restoration require			shutdown divisional equip			
		Contained within building			and both redundant trains	s A and B are operable.		
		Travel distance limits to		101				
	0 0	Access via stairwells and	exterionr doors					
	Property loss:	Moderate						

	Fire Area:	F6170	Description:	Description: Electrical Equipment				
	Building:	Radwaste	Applicable codes:	IBC; Reg Guide 1.18	9; NFPA 10, 14, 72, 101, 804			
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-20			Electrical classification:			
		9A.2-21			ated divisional equipment or cables:			
					ndant trains or equipment or cables:	none		
			Surrounded b	by fire barriers rated at:	3 hours	(4.F)		
				Except:	basemat (non-rated); elevator d			
			_		exterior underground walls (non	-rated)		
Consisting of the following Rooms:			Fire Detect	tion	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350	6170	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwells at each landing)	CO2 fire extinguishers	Hose racks (in nearby stairwells)		
			<u> </u>					
		< 1400	Anticipated combustible load,		Assuming automatic & manual FP			
		1400	Unsprinklered combustible loa	nd limit, MJ/m2	function, impact of design basis fir			
Assuming o	operation of ins	stalled fire extinguishing ed	quipment, impact of fire upon:		Complete burnout of all equipment this Fire Area affects no safety-r			
P	lant operation:	None; restoration requir	red before handling radwaste		divisional equipment; all safety of			
Radiol	logical release:	None, no radiological ma	aterials present		redundant trains A and B are op			
		Travel distance limits to	EXITs meet NFPA 101					
	al Ematicalities.	Access via stairwells						
Manu	ai mengnung.	Treeess (In Sent (1 ells						

	Fire Area	: F6190	Description:	Elevator			
	Building	: Radwaste	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME A	17.1	
		DCD Fig:	=	Bu	ilding code occupancy classification:		
		9A.2-20	Electrical classification: none				
		9A.2-21			lated divisional equipment or cables:		
		9A.2-22			undant trains or equipment or cables:	none	
		9A.2-23	Surround	ed by fire barriers rated a			
				Excep	basemat (non-rated); elevator do	ors (1.5 hr rated)	
Oneisting	of the followi	ng Rooms:	Fire De	etection	Fire Suppress	zion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
	Ttooin ::		1 minuty	Buttup	111111111	Buenap	
-9350	6190	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)	
13650	6580	Class IIIB lubricants Cable insulation Electrical equipment			CO2 fire extinguisher (outside room)		
P Radiol	lant operation ogical release Life safety	: None : None, no radiological ma : Travel distance limits to : Access via stairwells and	EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d redundant trains A and B are open	e on safe shutdown: nt and cables within lated or safe shutdown ivisions and both	

	Fire Area	F6191	Description:	Stairwell A			
	Building	Radwaste	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:	_	Bu	ilding code occupancy classificat	tion: F-1	
		9A.2-20	Electrical classification: none				
		9A.2-21			elated divisional equipment or cal		
		9A.2-22	Nonsafety-related redundant trains or equipment or cables: none			oles: none	
		9A.2-23	Surrounde	ed by fire barriers rated a	t: 3 hours		
				Excep	t: basemat (non-rated)		
Consisting	of the following	ng Rooms:	Fire De	tection	Fire Sup	pression	
EL	Room#	Potential Combustibles	Primary	Backup	Primary	Backup	
-9350 -2350 4650 10650	6191	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
13650		negligible 700	Anticipated combustible load Unsprinklered combustible		Assuming automatic & manual function, impact of design basi		
Access via exterior and interior doors Unsprinklered combustible None Plant operation: None None None, no radiological materials present Unsprinklered combustible None Plant operation: None None None None None None None None					Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.		

	Fire Area:	F6192	Description: Stairwell B					
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-20			Electrical classification	: none		
		9A.2-21	Safety-related divisional equipment or cables: none					
		9A.2-22		Nonsafety-related red	undant trains or equipment or cables	none		
		9A.2-23	Surround	ed by fire barriers rated a	t: 3 hours			
			_	Excep	t: basemat (non-rated)			
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350 -2350 4650	6192	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers		
10650								
		negligible	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FI	equipment does not		
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
			_		Complete burnout of all equipm	ent and cables within		
			quipment, impact of fire upor	n:	this Fire Area affects no safety-			
	Plant operation:				divisional equipment; all safety divisions and both			
Radiological release: None, no radiological m					redundant trains A and B are o	perable.		
Kaulo	T'C C'	Travel distance limits to	EXITs meet NFPA 101					
		Access via exterior and i	interior doors					

	Fire Area:	F6193	Description: Stairwell C					
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-20			Electrical classification	n: none		
		9A.2-21	Safety-related divisional equipment or cables: none					
		9A.2-22		Nonsafety-related red	undant trains or equipment or cables	s: none		
		9A.2-23	Surround	ed by fire barriers rated a	t: 3 hours			
]	Excep	t: basemat (non-rated)			
Consisting o	f the followin	ng Rooms:	Fire De	etection	Fire Suppre	ession		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350 -2350	6193	None	Area-wide ionization	Manual pulls (outside stairwell	Hose racks	ABC fire extinguishers		
4650 10650				at each landing)				
		negligible	Anticipated combustible lo	ad MJ/m2	Assuming automatic & manual Fl	P equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fi			
			_ chopriminorea como abusore	. 1044 11111, 1110, 1112	Complete burnout of all equipm			
Assuming or	peration of ins	stalled fire extinguishing ed	quipment, impact of fire upo	n:	this Fire Area affects no safety-			
	ant operation:				divisional equipment; all safety			
		None, no radiological ma	aterials present		redundant trains A and B are o			
		Travel distance limits to			·	•		
Manua		Access via exterior and i						
	Property loss:							

	Fire Area	: F6194	Description:	Stairwell D			
	Building	: Radwaste	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:		Bui	ilding code occupancy classification:	F-1	
		9A.2-20	Electrical classification: none				
		9A.2-21	Safety-related divisional equipment or cables: none				
		9A.2-22			undant trains or equipment or cables:	none	
		9A.2-23	Surround	ed by fire barriers rated at	3 hours		
			_	Except	basemat (non-rated)		
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppres	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-9350	6194	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
-2350 4650				(outside stairwell at each landing)			
10650			1				
		negligible	Anticipated combustible lo				
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fir		
P	lant operation	: None	quipment, impact of fire upo	n:	Complete burnout of all equipme this Fire Area affects no safety-r divisional equipment; all safety of	elated or safe shutdown divisions and both	
Radiol		None, no radiological ma			redundant trains A and B are op	erable.	
		Travel distance limits to					
Manu		Access via exterior and i	nterior doors				
	Property loss	: Negligible					

	Fire Area:	F6270	Description:	Radwaste Control R	oom Complex			
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	C	DCD Fig:	Building code occupancy classification: B					
		9A.2-21	Electrical classification: none					
		9A.2-22		Safety-rel	ated divisional equipment or cables:	none		
				Nonsafety-related redu	indant trains or equipment or cables:	none		
			Surrounded b	by fire barriers rated at:	3 hours			
					elevator doors (1.5 hr rated);			
				Except:	basemat for 6287 (non-rated)			
			interio	or fire barriers rated at:	1 hours			
		,	_	between:	rooms 6270 and 6287			
Consisting	of the following		Fire Detect	-	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-2350	6270	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Cable insulation		(outside stairwells		(in nearby stairwells)		
		Class A combustibles		at each landing)				
	6270	Cable insulation			Hose racks	ABC fire		
	below floor				(in nearby stairwells)	extinguishers		
	6287	Electrical equipment						
		Cable insulation						
4650	6382	Class A combustibles						
I		1400		2.57/ -2				
		< 1400	Anticipated combustible load,		Assuming automatic & manual FP			
		1400	Unsprinklered combustible loa	ad limit, MJ/m2	function, impact of design basis fire			
A:		-4-11- 4 C4::-1 '			Complete burnout of all equipme			
			quipment, impact of fire upon:	7	this Fire Area affects no safety-re			
			red before handling radwaste	4	divisional equipment; all safety d			
Kadio		None, no radiological m		4	redundant trains A and B are op-	erable.		
		Travel distance limits to	EXITS meet NFPA 101	4				
Manu		Access via stairwells		4				
	Property loss:	Moderate		J				

	Fire Area:	F6290	Description:	Stairwell E			
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-21			Electrical classification	n: none	
		9A.2-22			elated divisional equipment or cables		
		9A.2-23			undant trains or equipment or cables	s: none	
			t: 3 hours				
]	Excep	t: basemat (non-rated)		
	onsisting of the following Rooms:		Fire De		Fire Suppre		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-2350	6290	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
4650	0270	Tronc	Arca-wide folization	(outside stairwell at each landing)	Hose racks	Abe in extinguisher	
		negligible 700	Anticipated combustible lo Unsprinklered combustible	e load limit, MJ/m2	Assuming automatic & manual FI function, impact of design basis fi	ire on safe shutdown: nent and cables within	
		700 stalled fire extinguishing ec	^	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety-	ire on safe shutdown: nent and cables within related or safe shutdown	
P	lant operation:	700 stalled fire extinguishing econome	Unsprinklered combustible quipment, impact of fire upo	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- divisional equipment; all safety	fre on safe shutdown: nent and cables within related or safe shutdown divisions and both	
P	lant operation: ogical release:	700 stalled fire extinguishing ec None None, no radiological ma	Unsprinklered combustible quipment, impact of fire uponterials present	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety-	fre on safe shutdown: nent and cables within related or safe shutdown divisions and both	
P. Radiol	lant operation: ogical release: Life safety:	700 stalled fire extinguishing ec None None, no radiological ma Travel distance limits to	Unsprinklered combustible quipment, impact of fire uponterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- divisional equipment; all safety	fre on safe shutdown: nent and cables within related or safe shutdown divisions and both	
P. Radiol	lant operation: ogical release: Life safety:	700 stalled fire extinguishing economic None None, no radiological material Travel distance limits to Access via exterior and i	Unsprinklered combustible quipment, impact of fire uponterials present EXITs meet NFPA 101	e load limit, MJ/m2	function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- divisional equipment; all safety	fre on safe shutdown: nent and cables within related or safe shutdown divisions and both	

	Fire Area	: F6301	Description:	: HVAC Equipment				
	Building	: Radwaste	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
		DCD Fig:	<u>_</u>	Bui	lding code occupancy classification:	F-1		
		9A.2-22			Electrical classification:			
		9A.2-23			ated divisional equipment or cables:			
					indant trains or equipment or cables:	none		
			Surrounded l	by fire barriers rated at	3 hours			
				Except	elevator doors (1.5 hr rated)			
Consisting	of the followi	ng Rooms:	Fire Detec	tion	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	6380	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside stairwells	Hose racks	ABC fire extinguishers		
10650	6480	Filter media		at each landing)				
	6490	None						
		< 700	Anticipated combustible load,	MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible loa	ad limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
			equipment, impact of fire upon:	-	Complete burnout of all equipme this Fire Area affects no safety-re	elated or safe shutdown		
			red before handling radwaste	1	divisional equipment; all safety d			
Radiol		None, no radiological m		1	redundant trains A and B are op	erable.		
	-	Travel distance limits to	EXITs meet NFPA 101					
Manu		: Access via stairwells						
	Property loss	· Minor		1	ĺ			

Table 9A.5-6, Electrical Building

	Fire Area	F5100	Description:	Corridors			
	Building	Electrical	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 14, 72, 90A, 101, 804		
		DCD Fig:	<u>_</u>	В	uilding code occupancy classification		
		9A.2-25			Electrical classification	n: none	
		9A.2-26	Safety-related divisional equipment or cables: none				
		9A.2-27		Nonsafety-related re	dundant trains or equipment or cable	s: none	
		9A.2-28	Surround	ed by fire barriers rated	at: 3 hours		
		9A.2-29		Exce	pt: basemat (non-rated); elevator	doors (1.5 hr rated)	
		9A.2-30					
	of the following		Fire De		Fire Suppre		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5292B	Insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
1000	5100, 5101,	Cable insulation	- Tiren Wine Ionization	(at EXITs)	(in nearby stairwells)	TIDO III C CACINGUISHOT	
	5102, 5189			(40 212110)	(in near by sum wens)		
9080	5200						
13000	5300						
1000	5391						
18000	5400						
22000	5500						
27000	5600	1					
30000	5703	1					
		< 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual F function, impact of design basis f		
Radio	Plant operation: logical release: Life safety	Stalled fire extinguishing ed None None, no radiological materials to Travel distance limits to Access via doors	quipment, impact of fire upo aterials present	,	Complete burnout of all equipments of this Fire Area affects no safety-divisional equipment; all safety redundant trains A and B are of	nent and cables within related or safe shutdown divisions and both	

	Fire Area		Description:				
	Building	: Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804			
		DCD Fig:	•	Bui	lding code occupancy classification:		
		9A.2-25	Electrical classification: none				
		9A.2-26			lated divisional equipment or cables:		
					indant trains or equipment or cables:	A	
			Surround	led by fire barriers rated at	: 3 hours		
				Except	basemat (non-rated)		
Consisting	of the following	ng Rooms.	Fire De	etection	Fire Suppress	sion	
Consisting	l the following	Potential Combustibles	THEB		The Suppless		
EL	Room#	and Hazards	Primary	Backup	Primary	Backup	
4650	5150	3420 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)	
	5151	11,040 L of battery acid Battery cell cases Cable insulation					
	5152	13,680 L of battery acid Battery cell cases Cable insulation					
			Anticipated combustible lo Unsprinklered combustible	•	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme	e on safe shutdown:	
P Radiol	lant operation ogical release Life safety	stalled fire extinguishing equal None None, no radiological material Travel distance limits to a Access via doors	terials present	n:	this Fire Area affects only redund power and related equipment and equipment; all safety divisions an site power and related equipment	dant train A on-site d no safety-related nd redundant train B on	
	Property loss	: Moderate					

	Fire Area	a: F5154	Description: 1	Diesel Generator A				
	Building	g: Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-25			Electrical classification:			
		9A.2-26			related divisional equipment or cables:			
		9A.2-27			dundant trains or equipment or cables:	A		
			Surrounde	ed by fire barriers rated				
]	Exce	pt: basemat (non-rated)			
Consisting	of the follow	ing Rooms:	Fire Det	ection	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5154	Cable insulation Class IIIB lubricants Class II fuel oil	Cross-zoned UV/IR and spot heat	Suppression flowswitch	Preaction foam sprinkler 10.2 L/min per m2 over entire area	Hydrants		
		> 700 700	Anticipated combustible loa Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir	e on safe shutdown:		
P Radiol	lant operation logical release Life safety al firefighting			:	Complete burnout of all equipme this Fire Area affects only redun power and related equipment an equipment; all safety divisions an site power and related equipmen	dant train A on-site d no safety-related nd redundant train B on		

	Fire Area:	F5255	Description:	Day Tank A				
	Building:	Electrical	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 13, 15, 16, 24, 30, 37, 72, 1	101, 804		
		DCD Fig:			lding code occupancy classification:			
		9A.2-26	Electrical classification: none					
		9A.2-27			ated divisional equipment or cables:			
					indant trains or equipment or cables:	A		
			Surrounded by fire barriers rated at: 3 hours					
				Except	none			
	Consisting of the following Rooms:		Fire De		Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
8000	5255	Cable insulation	Cross-zoned UV/IR	Suppression	Preaction foam deluge	Hydrants		
		Class IIIB lubricants	and spot heat	flowswitch	16.3 L/min per m2			
		20,000L Class II fuel oil						
					-			
		> 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP e	aguinment does not		
		700	Unsprinklered combustible	-	function, impact of design basis fire			
		700	Onsprinklered combustible	load IIIIIt, WIJ/III2	Complete burnout of all equipment			
Assuming o	neration of ins	stalled fire extinguishing equ	uinment impact of fire uno	n·	this Fire Area affects only redund			
	lant operation:		arpinent, impact of the upo	11.	power and related equipment and			
		None, no radiological ma	terials present		equipment; all safety divisions an			
radioi		Travel distance limits to			site power and related equipment			
Manua		Access via doors			power una remon equipment	are operation		
	Property loss:							
	1 5			l				

	Fire Area:			D-G Electrical Equipm		
	Building:	Electrical	Applicable codes:		NFPA 10, 24, 72, 101, 804	
		DCD Fig:	=	Ві	uilding code occupancy classification:	
		9A.2-25			Electrical classification:	
		9A.2-26			elated divisional equipment or cables:	
					dundant trains or equipment or cables:	A
			at: 3 hours			
			Excep	ot: basemat (non-rated)		
Consistino	of the fall arring	a Daama.	Fire De	staation	Eiro Cunnraga	ion
EL	of the followin Room #	Potential Combustibles			Fire Suppress	
EL	KOOIII #	Potential Combustibles	Primary	Backup	Primary	Backup
4650	5156	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (at EXITs)	CO2 fire extinguishers	Hydrants
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP of function, impact of design basis fire	e on safe shutdown:
	operation of instant operation:		quipment, impact of fire upon	n:	Complete burnout of all equipme this Fire Area affects only redund power and related equipment and	lant train A on-site
Radiol	ogical release:	None, no radiological ma	aterials present		equipment; all safety divisions an	
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		site power and related equipment	
Manua	al firefighting:	Access via doors				_
	Property loss:	Moderate				

	Fire Area		Description:					
	Building	: Electrical	Applicable codes:		NFPA 10, 14, 72, 75, 101, 804			
		DCD Fig:	1	Building code occupancy classification: F-1 per IBC 307.9.				
		9A.2-25	Electrical classification: none					
		9A.2-26			lated divisional equipment or cables:			
					indant trains or equipment or cables:	В		
			Surround	ed by fire barriers rated at	: 3 hours			
				Except	basemat (non-rated)			
Consisting	of the followi	ng Rooms.	Fire De	etection	Fire Suppress	sion		
consisting	l the follows	Potential Combustibles	1114 2		The suppress			
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
4650	5160	3420 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)		
	5161	11,040 L of battery acid Battery cell cases Cable insulation						
	5162	13,680 L of battery acid Battery cell cases Cable insulation						
			Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme	e on safe shutdown:		
P Radiol	lant operation logical release Life safety al firefighting	None, no radiological ma Travel distance limits to Access via doors	terials present	n:	this Fire Area affects only redund power and related equipment and equipment; all safety divisions an site power and related equipment	dant train B on-site d no safety-related nd redundant train A on		
	Property loss	: Moderate						

	Fire Area:	F5164	Description:	Diesel Generator B			
	Building:	Electrical	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 13, 16, 24, 37, 72, 101, 80	4	
		DCD Fig:			uilding code occupancy classification:		
		9A.2-25	Electrical classification: none				
		9A.2-26			related divisional equipment or cables:		
		9A.2-27			dundant trains or equipment or cables:	В	
	Surrounded by fire barriers rated at: 3 hours						
]	Excep	pt: basemat (non-rated)		
C : - t :	- C 41 C- 11:	- D	Fire De	taatian	Eine Cymmae	-i	
	of the followin	g Rooms: Potential Combustibles			Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5164	Cable insulation	Cross-zoned UV/IR	Suppression	Preaction foam sprinkler	Hydrants	
		Class IIIB lubricants Class II fuel oil	and spot heat	flowswitch	10.2 L/min per m2 over entire area		
P Radiol	Plant operation: logical release: Life safety:	None None, no radiological ma Travel distance limits to Access via doors		load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund power and related equipment and equipment; all safety divisions an site power and related equipment	e on safe shutdown: ont and cables within lant train B on-site l no safety-related od redundant train A on-	

	Fire Area:	F5265	Description:	Day Tank B					
	Building	Electrical	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 13, 15, 16, 24, 30, 37, 72, 1	01, 804			
		DCD Fig:		В	Building code occupancy classification:	F-1			
		9A.2-26	Electrical classification: none						
		9A.2-27			related divisional equipment or cables:				
					edundant trains or equipment or cables: 1	B			
			Surround						
				Except: none					
	onsisting of the following Rooms:		Fire De		Fire Suppressi				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
8000	5265	Cable insulation Class IIIB lubricants 20,000L Class II fuel oil	Cross-zoned UV/IR and spot heat	Suppression flowswitch	Preaction foam deluge 16.3 L/min per m2	Hydrants			
		> 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP e function, impact of design basis fire				
			, p		Complete burnout of all equipmen				
Assuming	operation of in	stalled fire extinguishing eq	uipment, impact of fire upo	n:	this Fire Area affects only redunda				
Plant operation: None					power and related equipment and no safety-related				
P	Radiological release: None, no radiological ma		aterials present		equipment; all safety divisions and				
	logical release:	Trone, no radiological ma	ter mis present						
		Travel distance limits to			site power and related equipment				
Radio	Life safety				site power and related equipment				

	Fire Area:		Description:	D-G Electrical Equipm	ent B			
	Building:	Electrical	Applicable codes:		NFPA 10, 24, 72, 101, 804			
		DCD Fig:	-	Ві	uilding code occupancy classification:			
		9A.2-25		Electrical classification: none				
		9A.2-26			elated divisional equipment or cables:			
					dundant trains or equipment or cables:	В		
Surrounded by fire barriers rated at: 3 hours								
	Except: basemat (non-rated)							
Consisting	of the followin	a Roome:	Fire De	etection	Fire Suppress	ion		
EL		Potential Combustibles	Primary	Backup	Primary	Backup		
LL	TCOOIII II	1 otential comoustioles	Timary	Бискир	Timary	Бискир		
4650	5166	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (at EXITs)	CO2 fire extinguishers	Hydrants		
		< 1400	Anticipated combustible lo	*	Assuming automatic & manual FP e			
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
A couming o	maration of inc	stelled fire extinguishing of	quipment, impact of fire upor	n·	Complete burnout of all equipment this Fire Area offects only redund			
	lant operation:		quipment, impact of fire upo	11, 	this Fire Area affects only redund power and related equipment and			
		None, no radiological ma	atorials prosont		equipment; all safety divisions and	•		
Kauloi		Travel distance limits to			site power and related equipment			
Manue		Access via doors	EALLS HEEL INFLATUL		site power and related equipment	are operable.		
iviallu	Property loss:							
	Troperty 1088.	iviouel ate						

	Fire Area:	F5180	Description:	Fechnical Support Ce	nter Complex		
		Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 90A, 101, 804; 28 CFR 36				
	Buriang.	DCD Fig:	Building code occupancy classification: B				
		9A.2-25	Electrical classification: none				
		9A.2-26	Safety-related divisional equipment or cables: none				
		9A.2-27		-	dundant trains or equipment or cables:		
		9A.2-28	Surrounde	ed by fire barriers rated		1	
		9A.2-29		-	pt: basemat (non-rated)		
		9A.2-30			,		
		9A.2-31					
			J				
Consisting	of the following		Fire Det	tection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5180	Commutan againment	Summussian flavorritah	Manual mulls	Wet wine anniables	Hose racks	
4050	5181A, 5181B,	Computer equipment Furniture	Suppression flowswitch	Manual pulls (at EXITs)	Wet-pipe sprinkler 4.1 L/min per m2	(in nearby stairwells)	
		Cable insulation		(at EXIIS)	over most remote 140 m2	(in nearby stairwens)	
					over most remote 140 m2		
	5182A, 5182B,						
	5183, 5184, 5185,	Transient combustibles					
	5186A, 5186B,						
	5186C, 5187						
	above ceiling	Insulation	Area-wide ionization		Class ABC fire extinguishers	-	
	5292A	Insulation	Area-wide follization		Class ABC life extinguishers		
	3292A						
	1		<u> </u>				
		< 700	Anticipated combustible loa	ad, MJ/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fir		
			1	,	Complete burnout of all equipme		
Assuming of	operation of insta	lled fire extinguishing equi	pment, impact of fire upon:		this Fire Area affects no safety-re		
	Plant operation:	None			divisional equipment; all safety d		
Rad	liological release:	None, no radiological ma	iterials present		redundant trains A and B are op		
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		•		
Ma		Access via doors					
	Property loss:	Minor					

	Fire Area:	F5188	Description: Fire Protection Equipment				
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 15, 16, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-25			Electrical classification		
		9A.2-26			related divisional equipment or cables		
					dundant trains or equipment or cables	s: none	
			Surrounde	d by fire barriers rated			
			<u> </u>	Exce	pt: basemat (non-rated)		
a	0.1 0.11	_	T' P		F: G		
	of the followin	ř	Fire Dete		Fire Suppre	•	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5188	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (at EXITs)	Hose racks (in nearby stairwells)	ABC fire extinguishers	
		< 700 700	Anticipated combustible loa Unsprinklered combustible l		Assuming automatic & manual Fl function, impact of design basis fi	re on safe shutdown:	
A agumina	anaratian af in	stallad fire autinomishing as	vuinment impact of fire upon		Complete burnout of all equipm		
	Plant operation:		quipment, impact of fire upon	•	this Fire Area affects no safety- divisional equipment; all safety		
		None, no radiological ma	aterials present		redundant trains A and B are o		
radioi		Travel distance limits to			redundant trains A and B are of	perable.	
		The constance mines to	211110 11011111111111111111111111111111				
Manıı		Access via door					
Manu		Access via door Minor					

	Fire Area:	F5190	Description:	Elevator A			
		Electrical			NFPA 10, 14, 72, 101, 804; ASME	A17.1	
	8.	DCD Fig:	TF		ilding code occupancy classification:		
		9A.2-25	Electrical classification: none				
		9A.2-26	Safety-related divisional equipment or cables: none				
		9A.2-27		2	undant trains or equipment or cables:		
		9A.2-28	Surround	ed by fire barriers rated a		1	
		9A.2-29			t: basemat (non-rated); elevator de	oors (1.5 hr rated)	
9A.2-30						() ()	
		9A.2-31					
		<u> </u>	_				
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
				•			
4650	5190	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks	
		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)	
				at each landing)	at each landing)	,	
				3/			
30000	5701	Class IIIB lubricants	1		CO2 fire extinguisher		
		Cable insulation			(outside room)		
		Electrical equipment			(3.3.3.3.3.3.7)		
					•		
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible	-	function, impact of design basis fir	* *	
			p		Complete burnout of all equipme		
Assuming of	operation of in	stalled fire extinguishing ed	quipment, impact of fire upo	n:	this Fire Area affects no safety-re		
	lant operation:		, , , , , , , , , , , , , , , , , , , ,		divisional equipment; all safety d		
		None, no radiological ma	aterials present		redundant trains A and B are op		
1.000101		Travel distance limits to			and D are op	CI abic.	
Manu	•	Access via stairwells and					
TVICTIO	Property loss:		noisenay acces				
	Troperty 1033.	regugible			L		

	Fire Area:	F5191	Description:	Stairwell A			
	Building	Electrical	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:		Bu	ilding code occupancy classification:	F-1	
		9A.2-25]		Electrical classification:	none	
		9A.2-26	Safety-related divisional equipment or cables: none				
		9A.2-27	Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-28	Surround	ed by fire barriers rated at	3 hours		
		9A.2-29		Except	basemat (non-rated); elevator do	oors (1.5 hr rated)	
		9A.2-30					
		9A.2-31					
C : ':	C41 C 11 .	D	E. D	·	F: G	•	
	onsisting of the following Rooms: EL Room # Potential Combustibles		Fire De		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5191	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
9800	3171	TOHE	Arca-wide formzation	(outside stairwell	Hose racks	Abe in examguishers	
13000				at each landing)			
18000				at cach fanding)			
22000							
27000							
30000							
		•					
		negligible	Anticipated combustible lo		Assuming automatic & manual FP		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire		
					Complete burnout of all equipme		
			quipment, impact of fire upo	n:	this Fire Area affects no safety-re		
	ant operation:				divisional equipment; all safety d		
Radiolo		None, no radiological m			redundant trains A and B are op-	erable.	
3.6		Travel distance limits to					
		Access via exterior and i	interior doors				
	Property loss	Negligible					

	Fire Area	a: F5192	Description:	Elevator B				
	Building	g: Electrical	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804; ASME	A17.1		
		DCD Fig:		Building code occupancy classification: F-1				
		9A.2-25	Electrical classification: none					
		9A.2-26	Safety-related divisional equipment or cables: none					
		9A.2-27		Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-28	Surround	ed by fire barriers rated a	at: 3 hours			
		9A.2-29		Excep	ot: basemat (non-rated); elevator o	loors (1.5 hr rated)		
		9A.2-30		•		· ·		
		9A.2-31						
			_					
Consisting	of the followi		Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5192	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks		
		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)		
				at each landing)	at each landing)			
30000	5703	Class IIIB lubricants			CO2 fire extinguisher			
		Cable insulation			(outside room)			
		Electrical equipment						
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FI	P equipment does not		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi	re on safe shutdown:		
			-	ŕ	Complete burnout of all equipm	ent and cables within		
Assuming of	operation of in	nstalled fire extinguishing ed	quipment, impact of fire upo	n:	this Fire Area affects no safety-			
	lant operation				divisional equipment; all safety			
		None, no radiological m	aterials present		redundant trains A and B are of			
		Travel distance limits to				p = 		
Manu		g: Access via stairwells and						
		s: Negligible						
	op •							

	Fire Area	F5193	Description:	Stairwell B				
i	Building	Electrical			NFPA 10, 14, 72, 101, 804			
Ì		DCD Fig:		Bu	ilding code occupancy classification:	F-1		
Ì		9A.2-25	7	Electrical classification: none				
İ		9A.2-26		Safety-re	elated divisional equipment or cables:	none		
Ì		9A.2-27	Nonsafety-related redundant trains or equipment or cables: none					
Ì		9A.2-28	Surrounded by fire barriers rated at: 3 hours					
		9A.2-29		Excep	t: basemat (non-rated)			
		9A.2-30						
		9A.2-31						
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppress	sion		
	EL Room # Potential Combustibles		Primary	Backup	Primary	Backup		
			1		1. /			
4650	5193	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
9800				(outside stairwell		8		
13000				at each landing)				
18000				3/				
22000								
27000								
30000								
		negligible	Anticipated combustible lo	oad. MJ/m2	Assuming automatic & manual FP	equipment does not		
					function, impact of design basis fire on safe shutdown:			
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire	e on safe shutdown:		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme			
Assuming o	operation of in		Unsprinklered combustible quipment, impact of fire upon	ŕ		ent and cables within		
	operation of in	stalled fire extinguishing e	-	ŕ	Complete burnout of all equipme this Fire Area affects no safety-re	ent and cables within elated or safe shutdown		
Pl	lant operation:	stalled fire extinguishing e	quipment, impact of fire upor	ŕ	Complete burnout of all equipme	ent and cables within clated or safe shutdown ivisions and both		
Pl	lant operations ogical releases	stalled fire extinguishing ext	quipment, impact of fire upor	ŕ	Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d	ent and cables within clated or safe shutdown ivisions and both		
Pl Radiolo	lant operation ogical release Life safety	stalled fire extinguishing extensions None None, no radiological m	quipment, impact of fire upor aterials present DEXITs meet NFPA 101	ŕ	Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d	nt and cables within clated or safe shutdown ivisions and both		
Pl Radiolo Manua	lant operation ogical release Life safety	stalled fire extinguishing extended fire extinguishing extended for the None, no radiological material travel distance limits to Access via exterior and	quipment, impact of fire upor aterials present DEXITs meet NFPA 101	ŕ	Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d	nt and cables within clated or safe shutdown ivisions and both		

	Fire Area:	F5194	Description:	Stairwell C			
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-25			Electrical classifica		
		9A.2-26			elated divisional equipment or ca		
					undant trains or equipment or ca	bles: none	
			Surround	ed by fire barriers rated a			
]	t: basemat (non-rated)			
			_				
	Consisting of the following Rooms:		Fire De			pression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-2000	5194	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
1300 4650			11 00 (1100 10112011	(outside stairwell at each landing)	11000 1110110	in a casanguisass	
Pl	lant operation: ogical release:	None None, no radiological ma		e load limit, MJ/m2	Assuming automatic & manua function, impact of design bas Complete burnout of all equ this Fire Area affects no safe divisional equipment; all safe redundant trains A and B area.	is fire on safe shutdown: ipment and cables within ty-related or safe shutdown ety divisions and both	
		Travel distance limits to Access via exterior and i Negligible					

	Fire Area:	F5250	Description: I	Lower Cable Spreadin	ng A			
	Building:	Electrical	Applicable codes: I	BC; Reg Guide 1.189	; NFPA 10, 13, 14, 72, 101, 804			
		DCD Fig:	_	В	uilding code occupancy classification:			
		9A.2-26			Electrical classification:			
		9A.2-27			related divisional equipment or cables:			
			Nonsafety-related redundant trains or equipment or cables: A					
			Surrounded by fire barriers rated at: 3 hours					
			Except: none					
g · · ·	0.1 0.11		E' D	··	E: 0			
	Consisting of the following Rooms:		Fire Dete		Fire Suppress	•		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
9800	5250	Cable insulation	Suppression flowswitch	Manual pulls (at EXITs)	Wet-pipe sprinkler 12.2 L/min per m2 over most remote 235 m2	Hose racks (in nearby stairwells)		
			Anticipated combustible loa Unsprinklered combustible loa quipment, impact of fire upon	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme this Fire Area affects only redune	e on safe shutdown: ent and cables within dant train A on-site and		
	lant operation:				off-site power and related equipm	•		
Kadiol		None, no radiological m			related equipment; all safety divi			
Μσ		Travel distance limits to	EXIIS MEET NFPA 101		train B on-site and off-site power	and related equipment		
ivianu		Access via doors Moderate			are operable.			

Fire Area:	F5260	Description:	Lower Cable Spreadin	g B		
Building:	Electrical	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 13, 14, 72, 101, 804		
	DCD Fig:	Building code occupancy classification: F-1				
	9A.2-26			Electrical classification:	none	
	9A.2-27			elated divisional equipment or cables:		
		Nonsafety-related redundant trains or equipment or cables: B				
		Surrounde				
		_				
		_				
	Consisting of the following Rooms:		tection	Fire Suppres		
EL Room#	Potential Combustibles	Primary	Backup	Primary	Backup	
4650 5163	Cable insulation	Suppression flowswitch	Manual pulls	Wet-pipe sprinkler	Hose racks	
9800 5260	Cable insulation	Suppression nowswitch	(at EXITs)	12.2 L/min per m2 over most remote 235 m2	(in nearby stairwells)	
Plant operation: Radiological release:	None None, no radiological m Travel distance limits to		load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipment this Fire Area affects only redune off-site power and related equipment; all safety divitrain A on-site and off-site power are operable.	e on safe shutdown: ent and cables within dant train B on-site and nent and no safety- sions and redundant	

	Fire Area:	F5301	Description:	Battery C			
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	_	Building code occupancy classification: F-1 per IBC 307.9.11			
		9A.2-27			Electrical classification	none	
		9A.2-28			lated divisional equipment or cables		
					undant trains or equipment or cables	: C	
			Surrounded by fire barriers rated at: 3 hours				
				Except	none		
	of the following		Fire De	etection	Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
13000	5301	5520 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)	
P Radiol	lant operation: ogical release: Life safety:	None None, no radiological ma Travel distance limits to Access via doors		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fur Complete burnout of all equipm this Fire Area affects no safety-r divisional equipment; all safety or redundant trains A and B are op	re on safe shutdown: ent and cables within related or safe shutdown divisions and both	

Fire Area	: F5302	Description:	Electrical Equipment C				
Building	Electrical	Applicable codes:		NFPA 10, 14, 72, 101, 804			
	DCD Fig:	Building code occupancy classification: F-1					
	9A.2-27		Electrical classification: none				
	9A.2-28		Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: C				
			C				
		Surround	Surrounded by fire barriers rated at: 3 hours				
G : .:	D	E. D		E. 0			
Consisting of the following		Fire De		Fire Suppress			
EL Room#	Potential Combustibles	Primary	Backup	Primary	Backup		
13000 5302	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)		
Plant operation		Anticipated combustible lo Unsprinklered combustible quipment, impact of fire upor	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipme this Fire Area affects no safety-redivisional equipment; all safety d redundant trains A and B are open	e on safe shutdown: nt and cables within clated or safe shutdown ivisions and both		

	Fire Area:	F5303	Description: Electronic Equipment					
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	_	Bui	ilding code occupancy classification	n: F-1		
		9A.2-27	Electrical classification: none					
		9A.2-28			lated divisional equipment or cables			
					undant trains or equipment or cables	s: none		
			Surround	ed by fire barriers rated at	3 hours			
				Except	none			
Consisting	onsisting of the following Rooms:		Fire De	tection	Fire Suppre			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
13000	5303	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
	below floor		_	(outside stairwell)		(in nearby stairwell)		
13400	5303	Electrical equipment						
		Cable insulation						
		< 1400	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual Fl	P equipment does not		
		1400	Unsprinklered combustible		function, impact of design basis f	* *		
			F	,	Complete burnout of all equipm			
Assuming (operation of ins	stalled fire extinguishing ed	quipment, impact of fire upor	n:	this Fire Area affects no safety-			
	lant operation:				divisional equipment; all safety			
		None, no radiological ma	aterials present		redundant trains A and B are o			
		Travel distance limits to				•		
		Access via doors						
Manua	ai firefignting:	Access via uours						

	Fire Area	: F5350	Description:	Lower Electrical Equipm	ment A			
	Building	Electrical	Applicable codes:	: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	-	Building code occupancy classification: F-1				
		9A.2-27		Electrical classification: none				
		9A.2-28		Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: A				
			A					
			Surround					
]					
Consisting	of the followi	ng Rooms.	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
			,		,			
13000	5350	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Cable insulation		(outside stairwell)	_	(in nearby stairwell)		
		. 1400], ,, , , , , , , , , , , , , , , , , ,	1 MI/ 2	A			
		< 1400	Anticipated combustible lo					
		1400	Unsprinklered combustible	e ioad iimit, MJ/m2	function, impact of design basis fire			
A couming o	naration of in	actallad fire extinguishing a	quipment, impact of fire upo	n·	Complete burnout of all equipme this Fire Area affects only redund			
	lant operation		juipinent, inipact of the upo	'11. 	off-site power and related equipm			
		None, no radiological ma	aterials present		related equipment; all safety divi	•		
Rudion	-	Travel distance limits to			train B on-site and off-site power			
Manua		Access via doors			are operable.	and related equipment		
		Significant			are operation			
	- F 7		_					

	Fire Area:	F5360	Description:	Lower Electrical Equipa	ment B		
	Building	Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804			
		DCD Fig:	-	Building code occupancy classification: F-1			
		9A.2-27			Electrical classification:		
		9A.2-28			lated divisional equipment or cables:		
					indant trains or equipment or cables:	: B	
			Surround	ed by fire barriers rated at			
				Except	none		
Consistina	of the fellowin	na Daama:	Fire De	otaatian	Fire Comme	agion	
EL	of the following Room #	Potential Combustibles		i de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	Fire Suppres	•	
EL	ROOM #	Potential Combustibles	Primary	Backup	Primary	Backup	
13000	5360	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
1000		Cable insulation	THE WILL IN THE WILL	(outside stairwell)	002 me enunguismens	(in nearby stairwell)	
				,		·	
			•				
		< 1400	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not		
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fir		
					Complete burnout of all equipme		
			uipment, impact of fire upor	n:	this Fire Area affects only redun		
	lant operation:				off-site power and related equip	•	
Radio		None, no radiological ma			related equipment; all safety div		
	-	Travel distance limits to	EXITs meet NFPA 101		train A on-site and off-site power	r and related equipment	
Manu		Access via doors			are operable.		
	Property loss	Significant					

Fire	e Area:	F5450	Description: Upper Cable Spreading A				
Bu	uilding:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-28			Electrical classification:	none	
		9A.2-29			related divisional equipment or cables:		
					dundant trains or equipment or cables:	A	
			Surrounde	ed by fire barriers rated a	at: 3 hours		
	Ĺ		_	Excep	ot: none		
Consisting of the fo			Fire De		Fire Suppress		
EL Roc	om#	Potential Combustibles	Primary	Backup	Primary	Backup	
4650 51	153	Cable insulation	Suppression flowswitch	Manual pulls	Wet-pipe sprinkler	Hose racks	
	450	Cable insulation	Suppression nowswitch	(at EXITs)	12.2 L/min per m2 over most remote 235 m2	(in nearby stairwells)	
Plant ope Radiological r Life Manual firefi	eration: release: e safety: ighting:	None None, no radiological m	Anticipated combustible loa Unsprinklered combustible quipment, impact of fire upor aterials present DEXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipme this Fire Area affects only redune off-site power and related equipment; all safety divitrain B on-site and off-site power are operable.	e on safe shutdown: ent and cables within dant train A on-site and nent and no safety- sions and redundant	

	Fire Area:	F5460	Description:	Upper Cable Spreading	g B		
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-28			Electrical classification:		
		9A.2-29			related divisional equipment or cables:		
					dundant trains or equipment or cables:	В	
			Surrounde	ed by fire barriers rated a			
				Excep	pt: none		
			1		-		
	of the followin		Fire De		Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
18000	5460	Cable insulation	Cummungaion florescritch	Manual mulla	Wat wine annimbles	Hose racks	
18000	5460	Cable insulation	Suppression flowswitch	Manual pulls (at EXITs)	Wet-pipe sprinkler 12.2 L/min per m2 over most remote 235 m2	(in nearby stairwells)	
Pl	lant operation:	None	Anticipated combustible load Unsprinklered combustible quipment, impact of fire upor	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipment this Fire Area affects only redundent off-site power and related equipment.	e on safe shutdown: ent and cables within dant train B on-site and nent and no safety-	
Radiol		None, no radiological m			related equipment; all safety divi		
Μ-		Travel distance limits to	EXITS meet NFPA 101		train A on-site and off-site power	and related equipment	
		Access via doors			are operable.		
	Property loss:	IVloderate					

	Fire Area	: F5550	Description:	Upper Electrical Equipr	ment A		
	Building	Electrical	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 72, 101, 804		
		DCD Fig:		Bui	lding code occupancy classification:		
		9A.2-29	Electrical classification: none				
		9A.2-30			lated divisional equipment or cables:		
					indant trains or equipment or cables:	A	
			Surround	led by fire barriers rated at			
				Except	none		
G : ::	0.1 0.11	D.	E. D	· ·	E. C		
	Consisting of the following Rooms:			etection	Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
22000	5550	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (in nearby stairwell)	
P) Radiol	< 1400 Anticipated			e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redune off-site power and related equipment; all safety divitrain B on-site and off-site power are operable.	e on safe shutdown: ent and cables within dant train A on-site and nent and no safety- sions and redundant	
	Property loss	Significant					

	Fire Area	: F5560	Description:	Upper Electrical Equip	ment B		
	Building	: Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-29			Electrical classification:		
		9A.2-30			lated divisional equipment or cables		
					undant trains or equipment or cables	: B	
			Surround	ed by fire barriers rated at			
				Except	none		
G : .:	6.1 6.11 :	D	E. D	:	F: G		
	of the following			etection	Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
22000	5560	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		Cable insulation		(outside stairwell)		(in nearby stairwell)	
			<u> </u>				
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP		
		1400	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:		
					Complete burnout of all equipment and cables within		
			quipment, impact of fire upo	n: I	this Fire Area affects only redundant train B on-site and		
	lant operation		4 • 1		off-site power and related equipment and no safety-		
Kadiol		None, no radiological ma			related equipment; all safety divisions and redundant		
M		Travel distance limits to	EXIIs meet NFPA 101		train A on-site and off-site power and related equipment		
Manu		Access via doors			are operable.		
	Property loss	Significant					

	Fire Area:			HVAC Equipment A				
	Building:	Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 15, 72, 90A, 101, 804				
		DCD Fig:	_	Bι	ilding code occupancy classification:	F-1		
		9A.2-25	Electrical classification: none					
		9A.2-26		Safety-related divisional equipment or cables: none				
		9A.2-27		Nonsafety-related red	lundant trains or equipment or cables:	A		
		9A.2-28	Surround	ed by fire barriers rated a	t: 3 hours			
		9A.2-29		Excep	t: none			
		9A.2-30		Î				
		9A.2-31						
İ		•						
	Consisting of the following Rooms:		Fire De		Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5290A,	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
	5291A	Cable insulation		(outside stairwell	(at stairwells)			
27000	5650, 5651,	Filter media		at each landing)				
	5652, 5653	Insulation						
	Charcoal	Charcoal	HVAC temperature		Internal manual spray	Hose racks		
	Filter in		indication			(at stairwells)		
	5653							
			_		<u>. I </u>			
I		< 700	Anticipated combustible lo	-	Assuming automatic & manual FP	* *		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fir	e on safe shutdown:		
					Complete burnout of all equipme	ent and cables within		
Assuming	operation of in	stalled fire extinguishing ed	uipment, impact of fire upo	n:	this Fire Area results in loss of or	nly redundant train A		
P	Plant operation:	None			equipment; all safety divisions a	nd redundant train B		
Radio	logical release:	None, no radiological ma	iterials present		are unaffected by fire and are op			
		Travel distance limits to			1			
Manu	ıal firefighting:	Access via inteior doors						
	Property loss:							
i	1 2							

Fire Area:			HVAC Equipment B			
Building:		Applicable codes:				
	- E	7	Bu			
					В	
		Surround	ed by fire barriers rated a	t: 3 hours		
	9A.2-29		Excep	t: none		
	9A.2-30					
	9A.2-31					
of the followin	ng Rooms:	Fire De	tection	Fire Suppres	sion	
Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
· · · · · · · · · · · · · · · · · · ·		Area-wide ionization	-		ABC fire extinguishers	
			`	(at stairwells)		
			at each landing)			
Charcoal Filter	Charcoal	HVAC temperature indication		Internal manual spray	Hose racks (at stairwells)	
lant operation: ogical release: Life safety:	None None, no radiological ma	Unsprinklered combustible quipment, impact of fire upo aterials present	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipments Fire Area results in loss of or equipment; all safety divisions a are unaffected by fire and are op	e on safe shutdown: ent and cables within nly redundant train B nd redundant train A	
	building: both the following Room # 5290B, 5291B 5660, 5661, 5662, 5663 Charcoal Filter peration of instant operation: ogical release: Life safety:	Building: Electrical DCD Fig: 9A.2-25 9A.2-26 9A.2-27 9A.2-28 9A.2-29 9A.2-30 9A.2-31 of the following Rooms: Room # Potential Combustibles 5290B, Class IIIB lubricants Cable insulation Filter media Insulation Charcoal Filter	Building: Electrical DCD Fig: 9A.2-25 9A.2-26 9A.2-27 9A.2-28 9A.2-29 9A.2-30 9A.2-31 Of the following Rooms: Room # Potential Combustibles Fire Department of Insulation Charcoal Filter Charcoal Filter Applicable codes: Applicable cod	Building: DCD Fig: 9A.2-25 9A.2-26 9A.2-27 9A.2-28 9A.2-29 9A.2-30 9A.2-31	Building: Electrical DCD Fig: Pax-2-25 Spa-2-26 Safety-related divisional equipment or cables: Safety-related divisional equipment or cables: Safety-related divisional equipment or cables: Safety-related divisional equipment or cables: Safety-related divisional equipment or cables: Surrounded by fire barriers rated at: Sahours Pax-2-29 Surrounded by fire barriers rated at: Sahours Potential Combustibles Primary Backup Primary	

Table 9A.5-7, Yard

	Fire Area	F4201	Description: Lube Oil Storage				
	Building	Yard	Applicable codes:		9; NFPA 13, 15, 16, 24, 30, 804		
		DCD Fig:	Building code occupancy classification: U per IBC 312.1				
		9A.2-33			Electrical classification:		
				elated divisional equipment or cables:			
					undant trains or equipment or cables:	none	
			Surround	led by fire barriers rated a			
				Excep	t: none		
Consisting	of the following	ng Rooms:	Fire Do	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Lube Oil Storage	191,000L Class IIIB lubricating oil	Suppression flowswitch	Lube Oil system instrumentation	Dry-pilot foam deluge 12.2 L/min per m2	Hydrants	
		> 700 N/A	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fire	e on safe shutdown:	
P	Plant operation logical release	N/A stalled fire extinguishing ec None; restoration requir None, no radiological ma	Unsprinklered combustible uipment, impact of fire upoed before LO outage	e load limit, MJ/m2		e on safe shutdown: ent and cables within clated or safe shutdown livisions and both	
P Radio	Plant operation logical release Life safety	N/A stalled fire extinguishing ec None; restoration requir None, no radiological ma	Unsprinklered combustible uipment, impact of fire uponed before LO outage uterials present	e load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d	e on safe shutdown: ent and cables within clated or safe shutdown livisions and both	
P Radio	Plant operation logical release Life safety	N/A stalled fire extinguishing ec None; restoration requir None, no radiological ma N/A Access from open north	Unsprinklered combustible uipment, impact of fire uponed before LO outage uterials present	e load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d	e on safe shutdown: ent and cables within clated or safe shutdown livisions and both	

	Fire Area:	F4202	Description: Hydrogen Storage					
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 497, 804					
		DCD Fig:	Building code occupancy classification: U per IBC 312.1					
		9A.2-33			Electrical classification:			
					ated divisional equipment or cables:			
			Nonsafety-related redundant trains or equipment or cables: none					
			Surrounded b	by fire barriers rated at				
				Except	none			
Consisting	of the followin	a Daama:	Fire Detect	tion	Eiro Cunnyago	rion.		
EL	Room #	Potential Combustibles	Primary	Backup	Fire Suppress Primary	Backup		
EL	Kooiii #	Totential Combustibles	Filliary	Таскир	Filliary	Баскир		
4650	Hydrogen Storage	860 m3 hydrogen	H2 system	Manual pull (outside hazard)	Hydrant	ABC fire extinguishers		
	9			,				
		> 700	Anticipated combustible load,	MJ/m2	Assuming automatic & manual FP equipment does not			
		N/A	Unsprinklered combustible loa		function, impact of design basis fire			
			_		Complete burnout of all equipme	nt and cables within		
			quipment, impact of fire upon:	-	this Fire Area affects no safety-re	elated or safe shutdown		
			n (due to loss of H2 makeup)		divisional equipment; all safety d	ivisions and both		
Radiol	-	None, no radiological ma	nterials present		redundant trains A and B are ope	erable.		
	Life safety:							
Manu		Access all around						
	Property loss:	Moderate						

	Fire Area:	F4251	Description:	A Feedpump ASD Tra	ansformer			
	Building:		Applicable codes:	IBC; Reg Guide 1.189				
		DCD Fig:	Building code occupancy classification: U					
		9A.2-13			Electrical classification			
					related divisional equipment or cable			
					edundant trains or equipment or cable	es: none		
			Surround	led by fire barriers rated		1 () ()		
			Except: basemat (non-rated); north side (open); top (open)					
consisting	of the following		Fire De	etection	Fire Suppr	ression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	ASD A	< 4000 L Class IIIA	Transformer	None	Hydrants	CO2 fire		
		insulating mineral oil	instrumentation			extinguishers		
		(~15 MVA)						
				l				
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual F	FP equipment does not		
		N/A	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis			
					Complete burnout of all equip	ment and cables within		
Assuming			uipment, impact of fire upo		this Fire Area affects no safety			
D 1			at 100% w/ 3 FW pumps)		divisional equipment; all safety			
Kadı		None, no radiological m	aterials present		redundant trains A and B are o	operable.		
Mas	Life Safety:		id.	-				
iviai	nual firefighting: Property loss:	Access via open north s	iue	-				
	Froperty loss.	Mouerate		J	L			
								

	Fire Area:	F4252	Description:	C Feedpump ASD Tr	ansformer		
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 804				
		DCD Fig:	Building code occupancy classification: U				
		9A.2-13			Electrical classification		
					-related divisional equipment or cable		
					edundant trains or equipment or cable	es: none	
			Surround	ed by fire barriers rated			
				Exc	ept: basemat (non-rated); north si	de (open); top (open)	
consisting	of the following	Rooms:	Fire De	tection	Fire Suppr	ression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4670	, ap a	1000 I CI III	T. 4	•		GOA #	
4650	ASD C	< 4000 L Class IIIA	Transformer	None	Hydrants	CO2 fire	
		insulating mineral oil (~15 MVA)	instrumentation			extinguishers	
		,					
		< 700	Anticipated combustible loa	ad MI/m2	Assuming automatic & manual l	FP equipment does not	
		N/A	Unsprinklered combustible	-	function, impact of design basis		
		11/11	Chaprinkiered comodation	10dd 11111t, 1415/1112	Complete burnout of all equip		
Assuming	operation of insta	alled fire extinguishing eq	uipment, impact of fire upor	n:	this Fire Area affects no safety		
			at 100% w/3 FW pumps)		divisional equipment; all safety divisions and both		
Rad		None, no radiological m			redundant trains A and B are	-	
	Life Safety:		Î			1	
Ma	nual firefighting:	Access via open north s	ide				
	Property loss:	Moderate					
				·			

	Fire Area:	F4261	Description:	B Feedpump ASD Tr	ansformer		
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 804				
		DCD Fig:	Building code occupancy classification: U				
		9A.2-13	Electrical classification: none				
					-related divisional equipment or cable		
					edundant trains or equipment or cable	es: none	
			Surround	ed by fire barriers rated			
				Exc	ept: basemat (non-rated); north si	de (open); top (open)	
consisting	of the following	Rooms:	Fire De	etection	Fire Suppr	ression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650		< 4000 L Class IIIA insulating mineral oil (~15 MVA)	Transformer instrumentation	None	Hydrants	CO2 fire extinguishers	
Assuming			Anticipated combustible los Unsprinklered combustible uipment, impact of fire upor at 100% w/3 FW pumps)	load limit, MJ/m2	Assuming automatic & manual I function, impact of design basis Complete burnout of all equip this Fire Area affects no safety divisional equipment; all safety	fire on safe shutdown: ment and cables within r-related or safe shutdown	
Rad		None, no radiological m			redundant trains A and B are		
Ma		Access via open north s	ide				
1/14	Property loss:						
	- 10 p + 11 j 1000.			I	L		

	Fire Area:	F4262	Description:	D Feedpump ASD Tr	ansformer	
	Building:		Applicable codes:	IBC; Reg Guide 1.189	9; NFPA 10, 24, 804	
		DCD Fig:	-]	Building code occupancy classification	
		9A.2-13			Electrical classification	
					-related divisional equipment or cable	
					edundant trains or equipment or cable	es: none
			Surround	ed by fire barriers rated		
				Exc	ept: basemat (non-rated); north si	de (open); top (open)
consisting	of the following	Rooms:	Fire De	tection	Fire Suppr	ression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
4650		< 4000 L Class IIIA insulating mineral oil (~15 MVA)	Transformer instrumentation	None	Hydrants	CO2 fire extinguishers
	Plant operation:	None (turbine operates	Anticipated combustible los Unsprinklered combustible uipment, impact of fire upor at 100% w/ 3 FW pumps)	load limit, MJ/m2	Assuming automatic & manual I function, impact of design basis Complete burnout of all equipthis Fire Area affects no safety divisional equipment; all safety	fire on safe shutdown: ment and cables within -related or safe shutdown
	Radiological release: None, no radiological management Life Safety: N/A				redundant trains A and B are	operable.
Ma		Access via open north s	ide			
	Property loss:	Moderate				

	Fire Area:	F4271	Description:	Phase A Main Transform	ier		
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:	Building code occupancy classification: U				
		9A.2-13			Electrical classification:		
		9A.2-14			ated divisional equipment or cables:		
					indant trains or equipment or cables:	none	
			Surround	led by fire barriers rated at:			
				Except:	basemat (non-rated); north side (d	open); top (open)	
G : /:	C4 C11 : B		E. D	:	P: 0		
	of the following Ro		Fire De		Fire Suppressi		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Main	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants	
	Transformer A	insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2		
		(~625 MVA)			on all surfaces		
					l l		
		> 700	Anticipated combustible loa	d MI/m2	Assuming automatic & manual FP ed	quinment does not	
		N/A	Unsprinklered combustible l		function, impact of design basis fire		
		1771	ensprimerered compustioner	1000 mmt, 1110/m2	Complete burnout of all equipmen		
Assuming of	peration of installe	d fire extinguishing equipm	ent, impact of fire upon:		Fire Area affects no safety-related		
			ired to replace MT w/ ST		divisional equipment; all safety div		
Ra		None, no radiological ma			redundant trains A and B are open		
	Life safety:		•		and b are oper	unic.	
N	Ianual firefighting:	Access via open north sid	e				
	Property loss:	Significant					
				•			

	Fire Area: Building:		Description: Phase B Main Transformer Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804					
		DCD Fig: 9A.2-13	Building code occupancy classification: Electrical classification: none					
		9A.2-14	Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: 3 hours Except: basemat (non-rated); north side (open); top (open)					
Consisting EL	g of the following Ro Room #	Potential Combustibles	Fire De Primary	tection Backup	Fire Suppressi Primary	on Backup		
4650	Main Transformer B	>18,900L Class IIIA insulating mineral oil (~625 MVA)	Dry-pilot heat around transformer	Transformer instrumentation	Dry-pilot deluge 10.2 L/min per m2 on all surfaces	Hydrants		
F	Plant operation: Radiological release: Life safety:	None, no radiological ma N/A Access via open north sid	uired to replace MT w/ ST terials present		Assuming automatic & manual FP e function, impact of design basis fire Complete burnout of all equipmen Fire Area affects no safety-related divisional equipment; all safety divredundant trains A and B are open	on safe shutdown: It and cables within this or safe shutdown Visions and both		

Building: Yard DCD Fig: 9.A.2-13 9A.2-14 Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Except: Consisting of the following Rooms: EL Room # Potential Combustibles Primary A650 Main Transformer C Transformer C Non. 10.2 L/min per m2 10.2 L/min per m2 10.3 L/min per m2 10.3 L/min per m2 10.4 L/min per m2 10.5 L/min per m2 10.6 S MVA) Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Plant operation: Plant operation: Radiological release: None, no radiological materials present Life safety: Manual firefighting: Property loss: Significant Applicable codes: BC; Reg Guide 1.189; NPA 15, 24, 804 Building code occupancy classification: Deceupancy classification: None Building code occupancy classification: Deceupancy classification: None Baidling code occupancy classification: None Building code occupancy classification: None Building code occupancy classification: None Nonsafety-related divisional equipment or cables: None Backup Primary Backup Primary Backup Primary Backup Primary Backup Primary Backup Primary Backup Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with divisional equipment; all safety divisions and both redundant trains A and B are operable.		Fire Area:	F4273	Description:	Phase C Main Transform	ner		
Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Subsemat (non-rated); north side (open); top (open)		Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: 3 Jours								
Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Suppression								
Surrounded by fire barriers rated at Except Surrounded by fire barriers rated at Except			9A.2-14					
Except							none	
Consisting of the following Rooms: EL Room # Potential Combustibles Primary Backup A650 Main Transformer C insulating mineral oil (~625 MVA) Anticipated combustible load, MJ/m2 On all surfaces Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side Fire Detection Primary Backup Fire Suppression Primary Backup Primary Backup Transformer instrumentation Fire Suppression Fire Area affects no safety-related or safe shutdown Gomplete burnout of all equipment and cables with Fire Area affects no safety				Surround				
EL Room # Potential Combustibles Primary Backup 4650 Main Transformer C insulating mineral oil (-625 MVA) Transformer C N/A Dry-pilot heat around transformer instrumentation (-625 MVA) Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown: None, no radiological materials present None, no radiological materials present N/A Manual firefighting: Access via open north side				l	Except	: basemat (non-rated); north side (open); top (open)	
EL Room # Potential Combustibles Primary Backup 4650 Main Transformer C insulating mineral oil (-625 MVA) Transformer C N/A Dry-pilot heat around transformer instrumentation (-625 MVA) Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown: None, no radiological materials present None, no radiological materials present N/A Manual firefighting: Access via open north side	a : .:	C.1 C.11 : D		Б. Б		B: 6		
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side N/A Dry-pilot heat around transformer instrumentation Transformer instrumentation Dry-pilot deluge Hydrants 10.2 L/min per m2 on all surfaces Hydrants 10.2 L/min per m2 on all surfaces Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable. Access via open north side Dry-pilot deluge Hydrants 10.2 L/min per m2 on all surfaces 10.2 L/min per m2 on all su								
Transformer C insulating mineral oil (~625 MVA) Anticipated combustible load, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Pransformer C insulating mineral oil (~625 MVA) Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.	EL	Room #	Potential Combustibles	Primary	Васкир	Primary	Васкир	
Transformer C insulating mineral oil (~625 MVA) Anticipated combustible load, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Pransformer C insulating mineral oil (~625 MVA) Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.								
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.	4650						Hydrants	
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.		Transformer C	-	around transformer	instrumentation	_		
N/A Unsprinklered combustible load limit, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.			(~625 MVA)			on all surfaces		
N/A Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable. N/A Manual firefighting: Access via open north side								
N/A Unsprinklered combustible load limit, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.			> 700	Anticinated combustible los	A MI/m2	Assuming outomotic & manual ED a	aguinment dess not	
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side Complete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable. Somplete burnout of all equipment and cables with Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.								
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable. Some, no radiological materials present N/A Access via open north side			IV/A	Onsprinklered combustible	load IIIIIt, MJ/III2			
Plant operation: Radiological release: Life safety: Manual firefighting: Access via open north side Turbine trip; outage required to replace MT w/ ST None, no radiological materials present redundant trains A and B are operable. Access via open north side	Assuming of	operation of installe	d fire extinguishing equipm	ent impact of fire upon:				
Radiological release: Life safety: Manual firefighting: Access via open north side None, no radiological materials present redundant trains A and B are operable. redundant trains A and B are operable.						-		
Life safety: N/A Manual firefighting: Access via open north side	Ra							
Manual firefighting: Access via open north side	1.,			p		and B are ope	เ สมเร.	
	N			e				
^ ^								
		-F : .7	<i>a</i>					

ESBWR

	Fire Area:	F4274	Description: Spare Main Transformer				
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 804				
		DCD Fig:	_]	Building code occupancy classification	: <u>U</u>	
		9A.2-13			Electrical classification		
		9A.2-14			-related divisional equipment or cables		
					edundant trains or equipment or cables	none	
			Surrounde	•	at: 3 hours only on east side		
				Exc	ept: none		
G : :: 0.1			T		T: 0		
	he following Ro		Fire Det		Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Spare Main	none (transformer	None	None	Hydrants	ABC fire	
	•	maintained dry) (~625 MVA)			,	extinguishers	
P Radiol	Plant operation:	None, no radiological ma	aterials present		Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipm this Fire Area affects no safety-r divisional equipment; all safety or redundant trains A and B are op	re on safe shutdown: ent and cables within related or safe shutdown divisions and both	

ESBWR

	Fire Area:	F5157	Description:	Reserve Auxiliary Tran	sformer A			
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804					
		DCD Fig:	-	Bu	ilding code occupancy classification:			
		9A.2-25			Electrical classification:			
		9A.2-26			elated divisional equipment or cables:			
		9A.2-27			undant trains or equipment or cables:	A		
			Surround	led by fire barriers rated at				
				Except	basemat (non-rated); north side	(open); top (open)		
G	0.1 0.11 : 5		n: n		P: 3			
	of the following R		Fire De		Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650		40.0007 (31	75 11 1					
4650	Reserve	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants		
	Auxiliary	insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2			
	Transformer A	(~105 MVA)			on all surfaces			
		> 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	equinment does not		
		N/A	Unsprinklered combustible		function, impact of design basis fire			
		11/11	onsprinkierea comoustioie	7 10uu 11111t, 1413/1112	Complete burnout of all equipme			
Assuming	operation of installe	ed fire extinguishing equipr	ment, impact of fire upon:		this Fire Area affects only redund			
	Plant operation:		,		power and related equipment and			
R		None, no radiological ma	nterials present	equipment; all safety divisions, train A on-sit				
	Life safety:		related equipment, and re					
N		Access via open north sic	le		operable.	D cyaipment are		
	Property loss:				Special Control of the Control of th			
	r · · · · · · · · · · · · · · · · · · ·							

	Fire Area:			Unit Auxiliary Transfor			
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:	Building code occupancy classification: U				
		9A.2-25			Electrical classification:		
		9A.2-26			lated divisional equipment or cables:		
		9A.2-27			andant trains or equipment or cables:	A	
			Surround	led by fire barriers rated at		, , , , ,	
				Except	basemat (non-rated); north side (open); top (open)	
Consisting	of the following Ro	oome:	Fire De	ataction	Fire Suppress	ion	
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
L.D.	Room #	1 otential comoustioles	Timary	Бискир	Timury	Бискир	
4650	Unit Auxiliary	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants	
		insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2	v	
		(~105 MVA)			on all surfaces		
			1				
		> 700	Anticipated combustible lo		Assuming automatic & manual FP e		
		N/A	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire		
		1.6.			Complete burnout of all equipmen		
Assuming (ed fire extinguishing equipr	nent, impact of fire upon:		this Fire Area affects only redund		
D.	Plant operation:		4		power and related equipment and	-	
Ka		None, no radiological ma	teriais present		equipment; all safety divisions, tra		
λ.	Life safety:	Access via open north sid	lo.		related equipment, and redundan	t train B equipment are	
IV	Property loss:		it		operable.		
	rioperty loss.	Significant					

	Fire Area	: F5159	Description:	Fuel Oil Storage A		
	Building	: Yard	Applicable codes:		NFPA 11, 16, 24, 30, 72, 804	
		DCD Fig:	-	Building code occupancy classification: U		
		9A.2-33			Electrical classification: n	
					ated divisional equipment or cables:	
				•	andant trains or equipment or cables: A	1
			Surround	led by fire barriers rated at:		
			1	Except:	none	
Consisting	of the following	ng Pooms:	Fire De	etection	Fire Suppressi	on
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
22	Troom:		1 minut y	Buthup	1 mmy	Buenap
4650	Fuel Oil Tank A	~756,000L Class II fuel oil	Spot heat inside tank	UV/IR fire detection inside tank	Automatic foam surface cross- zoned deluge 6.5 L/min per m2	Hydrants
P Radiol	Plant operation logical release Life safety all firefighting	None None, no radiological ma	Anticipated combustible lo Unsprinklered combustible juipment, impact of fire upo aterials present	e load limit, MJ/m2	Assuming automatic & manual FP ed function, impact of design basis fire Complete burnout of all equipmen this Fire Area affects only redundate power and related equipment and equipment; all safety divisions and site power and related equipment and site power and related equipment.	on safe shutdown: t and cables within ant train A on-site no safety-related redundant train B on-

ESBWR

	Fire Area:	F5167	Description: Reserve Auxiliary Transformer B					
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 72, 804					
		DCD Fig:	Building code occupancy classification: U					
		9A.2-25			Electrical classification:	none		
		9A.2-26			elated divisional equipment or cables:			
		9A.2-27			lundant trains or equipment or cables:	В		
			Surround	led by fire barriers rated a				
				Excep	t: basemat (non-rated); north side	(open); top (open)		
	of the following Ro			etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Reserve	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants		
	Auxiliary Transformer B	insulating mineral oil (~105 MVA)	around transformer	instrumentation	10.2 L/min per m2 on all surfaces	v		
		> 700 N/A	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir	e on safe shutdown:		
		1.6			Complete burnout of all equipme			
Assuming		ed fire extinguishing equip	ment, impact of fire upon:	1	this Fire Area affects only redun			
D	Plant operation:		atoriala nuosant	power and related equipment and no safety-relat				
Radiological release: None, no radiological ma			ateriais present		equipment; all safety divisions, train B on-site power an			
1		Access via open north sig	:40		related equipment, and redundant train A equipment a			
IV.	Property loss:		ut		operable.			
	FIODCITY 1088.	Significant			I .			

ESBWR

	Fire Area:			Unit Auxiliary Transfor				
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 72, 804					
		DCD Fig:	Building code occupancy classification: U					
		9A.2-25			Electrical classification:			
		9A.2-26			elated divisional equipment or cables:			
		9A.2-27			undant trains or equipment or cables:	В		
			Surround	led by fire barriers rated at				
]	Except	t: basemat (non-rated); north side	(open); top (open)		
G . '.'	C.1 C.11 : B		E. D	· · ·	F: C			
	of the following Ro			etection	Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4670	** ** **	10.0004 63 444	75 11 1	T 4		** * .		
4650		>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants		
	Transformer B	insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2			
		(~105 MVA)			on all surfaces			
-								
		> 700	Anticipated combustible lo	and MI/m2	Assuming automatic & manual FP	equipment does not		
		N/A	Unsprinklered combustible		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:			
		11/11	Onsprinklered combustion	7 10dd 111111t, 1V13/1112	Complete burnout of all equipme			
Assuming	operation of installe	ed fire extinguishing equipr	ment impact of fire upon:		this Fire Area affects only redund			
1 issuining	Plant operation:		nent, impact of the upon.		power and related equipment and			
R		None, no radiological ma	iterials present					
IX.	Life safety:		iterials present	related equipment, and redundant train A equip				
λ		Access via open north sic	le		operable.	it train A equipment are		
1,	Property loss:		~~		opei abic.			
1	110perty 1055.	S-15-IIII-Cuit						

	Fire Area	F5169	Description:	Fuel Oil Storage B				
	Building	Yard	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 11, 16, 24, 30, 72, 804				
		DCD Fig:	Building code occupancy classification: U					
		9A.2-33			Electrical classification: n			
					ated divisional equipment or cables: n			
					indant trains or equipment or cables: B	1		
			Surround	led by fire barriers rated at				
				Except	none			
Consisting	of the following	na Poome.	Fire De	etection	Fire Suppression	nn .		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
	Ttoom :		1 minuty	Buthup		Buellup		
4650	Fuel Oil Tank B	~756,000L Class II fuel oil	Spot heat inside tank	UV/IR fire detection inside tank	Automatic foam surface cross- zoned deluge 6.5 L/min per m2	Hydrants		
		> 700 N/A	Anticipated combustible lo Unsprinklered combustible	e load limit, MJ/m2	Assuming automatic & manual FP ec function, impact of design basis fire of Complete burnout of all equipment	on safe shutdown:		
			uipment, impact of fire upo	n: I	this Fire Area affects only redunda			
	lant operation	None, no radiological ma	atorials prosont		power and related equipment and	-		
Kauloi	Life safety				equipment; all safety divisions and site power and related equipment a			
Manu		Access all around			site power and related equipment a	ire operable.		
ivialia	Property loss							
1	110perty 1033							

	Fire Area:	F7100	Description:	Pump House			
	Building:	Pump House	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-33			Electrical classification		
					ted divisional equipment or cable		
					dant trains or equipment or cable		
			Surrounded		to be determined during detai		
				Except	to be determined during detai	led design	
	the following I		Fire De		Fire Suppre		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be	to be	Class IIIB lubricants	Area wide ionization	Manual pulls (at	Hose racks	ABC fire	
determined		Cable Insulation		EXITs)		extinguishers	
during	during						
detailed	detailed						
design	design						
		< 700	Anticipated combustible	lood MI/m2	Assuming automatic & manual	ED aguinment dees not	
		700	Unsprinklered combustil		function, impact of design basis		
		700	Olispillikieled Collidusti	oic load illill, MJ/III2	Complete burnout of all equip		
Assuming one	ration of instal	lled fire extinguishing equ	inment impact of fire unc	on:	this Fire Area affects no safety		
		Turbine trip	ipinent, impact of the upo	JII.	shutdown divisional equipmen		
		None, no radiological m	naterials present		redundant train A and B nons		
Radio		to be determined during			equipment; all safety divisions	•	
Manu		to be determined during			off-site power supplies A and		
1.74114		to be determined during			and are operable.	b are unanceicu by me	
	115perty 1000.	to so determined during	5 accurrent menigin		and are operable.		
,							

	Fire Area	: F7150		Nonseismic Diesel Fire					
	Building	: Yard	Applicable codes:	IBC; Reg Guide 1.189;	; NFPA 10, 13, 20, 24, 30, 37, 72, 101,	804			
		DCD Fig:	-	Building code occupancy classification: F-1 per IBC 307.9.5					
		9A.2-33			Electrical classification:				
					related divisional equipment or cables:				
				Nonsafety-related redundant trains or equipment or cable					
			Surround	ed by fire barriers rated					
				Exce	pt: exterior walls (non-rated), roof (n	on-rated)			
Consisting	of the followi	ng Rooms:	Fire De	etection	Fire Suppress	ion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
4650	7150	< 2500 L Class II fuel Class IIIB lubricants	Suppression flowswitch	Manual pull	Wet-pipe sprinkler 12.2 L/min per m2	Hydrant			
		Cable insulation			over entire area				
			_						
		> 700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not				
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:				
					Complete burnout of all equipment				
			quipment, impact of fire upo	n:	this Fire Area results in loss of on				
	lant operation				driven fire pump; remaining two				
Radiol		None, no radiological m			diesel-driven) Seismic Category I				
Monn		Travel distance limits to		· · · · · · · · · · · · · · · · · · ·					
■ Ivianu	Manual firefighting: Access via exterior door			equipment and both A and B on-site power s unaffected by fire and are operable.					
1	Property loss								

	Fire Area:	F7180	Description:	Guard House			
	Building:	Guard House	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 24, 72, 90A, 101, 804		
		DCD Fig:	Building code occupancy classification: B				
		9A.2-33	Electrical classification: none				
					ted divisional equipment or cables:		
					dant trains or equipment or cables:		
			Surrounded		to be determined during detaile		
				Except	to be determined during detaile	d design	
Consisting of t			Fire De		Fire Suppress	1	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be	to be	Class A combustibles	Area-wide ionization	Manual pulls at	ABC fire extinguishers	Hydrant	
determined	determined	Cable insulation		EXITS			
during	during						
detailed	detailed						
design	design						
		< 700	Anticipated combustible	load MJ/m2	Assuming automatic & manual Fl	P equipment does not	
		700	Unsprinklered combustil		function, impact of design basis fi	* *	
] P	,	Complete burnout of all equipm		
Assuming ope	ration of instal	led fire extinguishing equ	ipment, impact of fire upo	on:	this Fire Area affects no safety-		
	lant operation:				shutdown divisional equipment:		
		None, no radiological m	aterials present		and both redundant trains A an		
		to be determined durin				F	
Manu		to be determined durin					
		to be determined durin					

	Fire Area:	F7200	Description:	Hot Machine Shop	o & Storage			
	Building:	Hot Machine Shop	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-33			Electrical classification:			
					ed divisional equipment or cables:			
					lant trains or equipment or cables:			
			Surrounded by fire barriers rated at: to be determined during detailed design					
				Except:	to be determined during detaile	ed design		
Consisting of t	the following F	Rooms:	Fire Detection	on	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
					·	-		
to be determined during detailed design	to be determined during detailed design	Class A combustibles Cable insulation Transient combustibles Class IIIB lubricants	Area wide linear heat	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers Class D fire extinguishers		
P Radiol	lant operation: ogical release: Life safety: al firefighting:	700 led fire extinguishing equi None Contained within buildi to be determined during	detailed design n every 15 m of exterior wall	nd limit, MJ/m2	Assuming automatic & manual F function, impact of design basis f Complete burnout of all equipments Fire Area affects no safety-shutdown divisional equipment and both redundant trains A and	Tire on safe shutdown: ment and cables within related or safe ;; all safety divisions		

	· ·	F7300 Service Water DCD Fig: 9A.2-33	Description: Service Water / Water Treatment Building Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804 Building code occupancy classification: to be determined during detailed design Electrical classification: none Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: to be determined during detailed design				
Consisting of t	he following R Room#	Rooms: Potential Combustibles	Fire Detection Primary	-	to be determined during deta Fire Suppr Primary	•	
to be determined during detailed design	to be determined during detailed design	Class IIIB lubricants Cable insulation Electrical equipment	Area wide spot heat	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers	
P Radiol	lant operation: ogical release: Life safety: al firefighting:	None, but may affect m None, no radiological m to be determined during	aterials present g detailed design in every 15 m of exterior wall		Assuming automatic & manual function, impact of design basis Complete burnout of all equipthis Fire Area affects no safet shutdown divisional equipme redundant train A and B non equipment; all safety division off-site power supplies A and and are operable.	s fire on safe shutdown: pment and cables within y-related or safe nt, but could affect safety-related s and both on-site and	

	Fire Area:	F7400	Description:	Cold Machine Sho	р		
	Building:	Cold Machine Shop	Applicable codes:	IBC; Reg Guide 1.	.189; NFPA 10, 14, 72, 90A, 101	, 804	
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-33			Electrical classification		
					ed divisional equipment or cables		
					lant trains or equipment or cables		
			Surrounded by t		to be determined during detail		
				Except:	to be determined during detail	led design	
Consisting of t			Fire Detection	Ī	Fire Suppre		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be	to be	Class IIIB lubricants	Area wide linear heat	Manual pulls (at	Hose racks	ABC fire	
determined	determined	Cable insulation		EXITs)		extinguishers	
during	during						
detailed	detailed						
design	design						
		< 700	Anticipated combustible load,	MI/m2	Assuming automatic & manual 1	ED aguinment does not	
		700	Unsprinklered combustible loa		function, impact of design basis		
		700	Chapmikiered comoustione loa	id IIIIIt, WiJ/III2	Complete burnout of all equip		
Assuming one	ration of instal	led fire extinguishing equi	ipment, impact of fire upon:		this Fire Area affects no safety		
	lant operation:		pinone, impuer er ine upen.	1	shutdown divisional equipmen		
		None, no radiological m	aterials present		and both redundant trains A a		
2 2 3 3 4 7 0 2		to be determined during		1	and both redundant trains A a	ina b are operable.	
Manu			in every 15 m of exterior wall	1			
		to be determined during		1			
	1 5			ı			

	Fire Area:	F7500	Description:	Warehouse		
	Building:	Warehouse	Applicable codes:	IBC; Reg Guide 1.189	9; NFPA 10, 13, 72, 90A, 101, 804	
		DCD Fig:	-	Build	ding code occupancy classification:	
		9A.2-33			Electrical classification:	
					ted divisional equipment or cables:	
					ndant trains or equipment or cables:	
			Surrounded			
				Except	to be determined during detailed	d design
Consisting of t	the following F	Rooms:	Fire D	etection	Fire Suppress	ion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
to be	to be	Class A combustibles	Suppression	Manual pulls at	Dry-pipe sprinkler	ABC fire
determined during detailed design	determined during detailed design	Cable insulation Class IIIB lubricants	flowswitch	EXITs	8.2 L/min per m2 over most remote 302 m2 (rack protection to be determined during detailed design)	extinguishers
P Radiol	lant operation: ogical release: Life safety: al firefighting:	> 700 700 led fire extinguishing equ None None, no radiological m to be determined durin to be determined durin to be determined durin	naterials present g detailed design g detailed design	ible load limit, MJ/m2	Assuming automatic & manual FI function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety-shutdown divisional equipment; and both redundant trains A an	re on safe shutdown: eent and cables within related or safe all safety divisions

	Fire Area:	F7600		Training Center				
	Building:	Training Center	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 13, 72, 75, 90A, 101, 8	304		
		DCD Fig:	Building code occupancy classification: B					
		9A.2-33			Electrical classification:			
					ted divisional equipment or cables:			
					dant trains or equipment or cables:			
			Surrounded by fire barriers rated at: to be determined during detailed design					
			_	Except	to be determined during detaile	d design		
			E. D		F: 0			
	the following F		Fire De		Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
to be determined	to be determined	Class A combustibles Cable insulation	Suppression flowswitch	Manual pulls at EXITs	Preaction sprinkler 4.1 L/min per m2	CO2 fire extinguishers		
during detailed design	during detailed design	Computer equipment			over most remote 182 m2	ABC fire extinguishers		
		> 700 700	Anticipated combustible Unsprinklered combusti		Assuming automatic & manual Fl function, impact of design basis fi	re on safe shutdown:		
P Radiol	lant operation: logical release: Life safety: al firefighting:	led fire extinguishing equinone None, no radiological m to be determined during to be determined during to be determined during	aterials present g detailed design g detailed design	on:	Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment; and both redundant trains A an	related or safe all safety divisions		

	Fire Area:	F7700	Description:	Service Building					
	Building:	Service	Applicable codes:	IBC; Reg Guide 1.	189; NFPA 10, 13, 72, 90A, 101,	804; 28 CFR 36			
		DCD Fig:	Building code occupancy classification: B						
		9A.2-33			Electrical classification:				
					ed divisional equipment or cables:				
					ant trains or equipment or cables:				
			Surrounded by fire barriers rated at: to be determined during detailed design						
			Except: to be determined during detailed design						
Consisting of t			Fire Detection		Fire Suppress				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
to be	to be	Class A combustibles	Suppression flowswitch	Manual pulls at	Wet-pipe sprinkler	ABC fire			
determined		Cable insulation		EXITs	4.1 L/min per m2	extinguishers			
during	during				over most remote 140 m2				
detailed	detailed								
design	design								
		> 700	Anticipated combustible load,	MI/m2	Assuming automatic & manual F	D aguinment dess not			
		700	Unsprinklered combustible loa		function, impact of design basis f				
i		700	Olispinikiered collidustible loa	d IIIIIt, MJ/III2	Complete burnout of all equipm				
Assuming one	ration of inetal	lad fire extinguishing equi	ipment, impact of fire upon:		this Fire Area affects no safety-				
			ss into RB/FB/CB/TB/RW	1	-				
		None, no radiological m			shutdown divisional equipment and both redundant trains A an				
Kauloi		to be determined during			janu both redundant trains A an 	и в аге орегавіе.			
Manu		to be determined during							
ivialiu		to be determined during							
	Troperty 1088.	to be ueter innieu uuring	g uctaneu uesign	I					

i	Fire Area:	F7800	Description:	Auxiliary Boiler B	uilding				
	Building:	Auxiliary Boiler	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804						
		DCD Fig:	Building code occupancy classification: to be determined during detailed design						
		9A.2-33	Elec	etrical classification:	to be determined during detaile	d design			
					ed divisional equipment or cables:				
					lant trains or equipment or cables:				
			Surrounded by f		to be determined during detaile				
			Except: to be determined during detailed design						
Consisting of the			Fire Detection	•	Fire Suppress				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
to be	to be	Class IIIB lubricants	Area wide spot heat	Manual pulls (at	ABC fire extinguishers	Hydrants			
determined		Cable insulation		EXITs)					
during	U	Electrical equipment							
detailed	detailed								
design	design								
		< 700	1 44: -:4:14: 1.1.1.1.1.1.1.1	MI/2	A1 El	Di			
		700	Anticipated combustible load, Unsprinklered combustible loa		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:				
		/00	Olispillikiered combustible loa	iu iiiiii, ivij/iii2					
Assuming oner	ation of install	led fire extinguishing equi	ipment, impact of fire upon:		Complete burnout of all equipm this Fire Area affects no safety-				
		None; restoration requi		1	shutdown divisional equipment				
		None, no radiological m			and both on-site and off-site po				
Rudion		to be determined during		1	are unaffected by fire and are o				
Manua			in every 15 m of exterior wall		are unaffected by fire and are o	per anie.			
		to be determined during	•	1					
	P*10, 1000.	week milited will in	9	ı					

	Fire Area:	F7900	Description: Administration Building				
	Building:	Administration	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 13, 72, 90A, 101, 804;	28 CFR 36	
		DCD Fig:	Building code occupancy classification: B				
		9A.2-33			Electrical classification:		
					ted divisional equipment or cables:		
					dant trains or equipment or cables:		
			Surrounded		to be determined during detaile		
				Except	to be determined during detaile	d design	
Consisting of t	the following F	Zoome:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
			,		,		
to be determined during detailed design	to be determined during detailed design	Class A combustibles Cable insulation	Suppression flowswitch	Manual pulls at EXITs	Wet-pipe sprinkler 4.1 L/min per m2 over most remote 140 m2	ABC fire extinguishers	
> 700 700 Property loss: Moderate Assuming operation of installed fire extinguishing equ Plant operation: Radiological release: Life safety: Manual firefighting: Property loss: to be determined durin to be determined durin			naterials present g detailed design g detailed design	ble load limit, MJ/m2	Assuming automatic & manual Fl function, impact of design basis for Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipments and both redundant trains A an	ire on safe shutdown: nent and cables within related or safe ; all safety divisions	

	Fire Area:	F8110	Description:	Breathing Air Storage	Division I			
	Building:	EBAS Structure	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 24, 72, 101, 804			
		DCD Fig:	=	Building code occupancy classification: F-1				
		9A.2-2			Electrical classification:	none		
		9A.2-3			elated divisional equipment or cables:			
		9A.2-4			dundant trains or equipment or cables:	none		
		9A.2-11	Surround	led by fire barriers rated a				
]	Excep	ot: basemat (non-rated), exterior wa	alls (non-rated)		
	Consisting of the following Rooms:		-8	etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
7.400	0110	CI HIDI I : 4		N/ 1 11	П.	ADC C 11 11		
-7400	8110	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls	Hydrants	ABC fire extinguishers		
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fit			
			•		Complete burnout of all equipme	ent and cables within		
			uipment, impact of fire upo	n:	this Fire Area results in loss of o	•		
	lant operation:				emergency breathing air; Division II and III of			
Radiol		None, no radiological ma			breathing air and trains A and B are unaffected by fire			
		Travel distance limits to			and are operable. Both A and B on-site power sources			
Manu		Limited access via hatch			are unaffected by fire and are op	oerable.		
	Property loss:	Moderate						

Building: EBAS Structure DCD Fig: 9A.2-2 9A.2-3 9A.2-4 9A.2-11 Surrounded by fire barriers rated at: Except: Backup Consisting of the following Rooms: EL Room # Potential Combustibles Primary Backup -7400 8120 Class IIIB lubricants Cable insulation Area-wide ionization Plant operation: Plant operation: Plant operation: Radiological release: Life safety: Property loss: Minor Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804 Electrical classification: Plant operation: Radiological release: Life safety: Fire Detection Primary Backup Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804 Electrical classification: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Property loss: Minor Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804 Electrical classification: Plant operation: None, no radiological materials present Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Property loss: Minor		Fire Area	: F8120	Description:	Breathing Air Storage D	Division II		
Safety-related divisional equipment or cables: II		Building	EBAS Structure	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 24, 72, 101, 804		
Safety-related divisional equipment or cables: II				=	Bui			
Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Surrounded by fire barriers rated at: Except: Suppression						Electrical classification:	none	
Surrounded by fire barriers rated at: Except: basemat (non-rated), exterior walls (non-rated) Consisting of the following Rooms: EL Room # Potential Combustibles Primary Backup -7400 8120 Class IIIB lubricants Cable insulation Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: None, no radiological materials present Life safety: Manual firefighting: Manual firefighting: Surrounded by fire barriers rated at: Backup Fire Detection Fire Suppression Primary Backup Annual pulls Hydrants ABC fire extinguishes Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Travel distance limits to EXITs meet NFPA 101 Limited access via hatch								
Except Basemat (non-rated), exterior walls (non-rated)							none	
Consisting of the following Rooms: EL Room # Potential Combustibles Primary Backup -7400 8120 Class IIIB lubricants Cable insulation Cable insulation Cable in			9A.2-11	Surround				
EL Room # Potential Combustibles Primary Backup Primary Backup -7400 8120 Class IIIB lubricants Cable insulation Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Radiological release: Life safety: Manual firefighting: Limited access via hatch Area-wide ionization Manual pulls Hydrants ABC fire extinguishes Hydrants ABC fire extinguishes Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Backup Primary Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Backup]	Except	: basemat (non-rated), exterior wa	alls (non-rated)	
EL Room # Potential Combustibles Primary Backup Primary Backup -7400 8120 Class IIIB lubricants Cable insulation Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Radiological release: Life safety: Manual firefighting: Limited access via hatch Area-wide ionization Manual pulls Hydrants ABC fire extinguishes Hydrants ABC fire extinguishes Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Backup Primary Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Backup				_				
Tavel distance limits to EXITs meet NFPA 101 Limited access via hatch					i e e e e e e e e e e e e e e e e e e e			
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Limited access via hatch Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Limited access via hatch Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.								
Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Limited access via hatch	-7400	8120		Area-wide ionization	Manual pulls	Hydrants	ABC fire extinguishers	
Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Timited access via hatch Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable.			Cable insulation					
Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Too Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Sone, no radiological materials present Limited access via hatch Limi								
Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Too Unsprinklered combustible load limit, MJ/m2 Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.			< 700]	1 MI/ 2	A1 FD		
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Travel distance limits to EXITs meet NFPA 101 Limited access via hatch Complete burnout of all equipment and cables within this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable.				*		•		
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Plant operation: None None, no radiological materials present Life safety: Manual firefighting: Travel distance limits to EXITs meet NFPA 101 Limited access via hatch this Fire Area results in loss of only Division II emergency breathing air; Division I and III of breathing air and trains A and B are unaffected by fire and are operable. Unaffected by fire and are operable.			/00	Unsprinklered combustible	e ioad iimit, MJ/m2			
Plant operation: Radiological release: Life safety: Manual firefighting: None None None Radiological release: Life safety: Limited access via hatch None Radiological release: Life safety: Manual firefighting: None Radiological release: None, no radiological materials present air and trains A and B are unaffected by fire and are operable. None, no radiological materials present air and trains A and B on-site power sources are unaffected by fire and are operable.	A saumina	anaratian af in	actallad fire autinomichina ac	vinment impact of fire uno	.n.			
Radiological release: Life safety: Manual firefighting: None, no radiological materials present Life safety: Manual firefighting: None, no radiological materials present A and B are unaffected by fire and are operable. air and trains A and B are unaffected by fire and are operable. None, no radiological materials present operable. Both A and B on-site power sources are unaffected by fire and are operable.				juipinent, impact of fire upo	111. 			
Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Limited access via hatch Operable. Both A and B on-site power sources are unaffected by fire and are operable.				ntarials prosent			_	
Manual firefighting: Limited access via hatch unaffected by fire and are operable.	Radio					· ·		
· · · · · · · · · · · · · · · · · · ·	Manu							
Troporty room, institute and i	ivialiu					unanceted by the and are operat	UIC.	
		Troperty 1033			Ī			

	Fire Area	: F8130	Description:	Breathing Air Storage	Division III			
	Building	EBAS Structure		IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804				
		DCD Fig:	- -	Building code occupancy classification: F-1				
		9A.2-2			Electrical classification:	none		
		9A.2-3		Safety-related divisional equipment or cables: III				
		9A.2-4			undant trains or equipment or cables:	none		
		9A.2-11	Surround	led by fire barriers rated a				
				Excep	t: basemat (non-rated), exterior wa	alls (non-rated)		
G : 1:	C41 C 11 '	D.	E. D	:	E. G			
	of the followi	•		etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	8130	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls	Hydrants	ABC fire extinguishers		
		< 700 700	Anticipated combustible lo Unsprinklered combustible	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipme	re on safe shutdown: ent and cables within		
			quipment, impact of fire upo	n:	this Fire Area results in loss of or			
	Plant operation: None				emergency breathing air; Divisi	_		
Kadıol	Radiological release: None, no radiological materials present				air and trains A and B are unaff	-		
M	Life safety: Travel distance limits to EXITs n Manual firefighting: Limited access via hatch				operable. Both A and B on-site			
Manu					unaffected by fire and are opera	ble.		
	Property loss	S: Nimor						

	Fire Area	: F8250	Description:	Electric Firepump A				
	Building	Fire Pump Enclosure	Applicable codes:	IBC; Reg Guide 1.189; NFPA 10, 20, 24, 72, 101, 804				
		DCD Fig:	-	Bu	ilding code occupancy classification:			
		9A.2-4		Electrical classification: none				
					elated divisional equipment or cables:			
					undant trains or equipment or cables:			
			Surround	-	t: 3 hours (fire wall common with F			
				Excep	t: exterior walls (non-rated), roof (n	ion-rated)		
			T					
	of the following		Fire De	i e e e e e e e e e e e e e e e e e e e	Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	8250	Class IIIB lubricants	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hydrant		
		Cable insulation			+			
		< 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	equinment does not		
		700	Unsprinklered combustible		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:			
			e noprimirere a como assiste	, 10 44 11111, 1110, 111 <u>-</u>	Complete burnout of all equipment			
Assuming of	operation of in	stalled fire extinguishing eq	uipment, impact of fire upo	n:	this Fire Area results in loss of on			
	lant operation		1 / 1		fire pump; remaining two diesel-			
		None, no radiological ma	terials present		(Seismic Category I and nonseism			
Life safety: Travel distance limits to EXITs meet 1					shutdown equipment are unaffect			
Manual firefighting: Access via door					operable. Both A and B on-site p			
	Property loss				unaffected by fire and are operab			
				ı				
1								

	Fire Area:	F8260	Description:	Diesel Fire Pump B			
	Building:	Fire Pump Enclosure	Applicable codes:	IBC; Reg Guide 1.189; N	eg Guide 1.189; NFPA 10, 13, 20, 24, 30, 37, 72, 101, 804		
		DCD Fig:	- -				
		9A.2-4			Electrical classification:	none	
				Nonsafety-related redu	ndant trains or equipment or cables:	В	
			Surround				
				Except:	exterior walls (non-rated), roof (n	on-rated)	
	of the following		Fire De	i			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	8260	< 2500 L Class II fuel	Suppression flowswitch	Manual pull		Hydrant	
		Class IIIB lubricants			12.2 L/min per m2		
		Cable insulation			over entire area		
			1				
		> 700	Anticipated combustible lo				
		700	Unsprinklered combustible	e load limit, MJ/m2			
			uipment, impact of fire upo	n:	•		
	lant operation:						
Radiol	Radiological release: None, no radiological mate						
.,,	Life safety: Travel distance limits to E		EXITS meet NFPA 101		Electrical classification: Electrical classification: Electrical classification: Blackup: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment or cables: Ent trains or equipment with F8250) Enterior walls (non-rated), roof (non-rated) Fire Suppression Primary Eackup Wet-pipe sprinkler 12.2 L/min per m2 over entire area Essuming automatic & manual FP equipment does not enction, impact of design basis fire on safe shutdown: Emplete burnout of all equipment and cables within its Fire Area results in loss of only Seismic Category I essel-driven fire pump; remaining two (motor-driven and nonseismic diesel-driven) fire pumps and all safe utdown equipment are unaffected by fire and are estable. Both A and B on-site power sources are		
Manu	Manual firefighting: Access via door				ring code occupancy classification: Electrical classification: d divisional equipment or cables: ant trains or equipment or cables: hours (fire wall common with F8250) reterior walls (non-rated), roof (non-rated) Fire Suppression Primary Backup Wet-pipe sprinkler 12.2 L/min per m2		
	Property loss:	Minor			unaffected by fire and are operable	le.	

	Fire Area	: F9101	Description:	Uncontrolled Access			
	Building	Tunnel Tunnel	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804		
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-3			Electrical classification:	none	
		9A.2-25			elated divisional equipment or cables:		
					dundant trains or equipment or cables:	none	
			Surround	led by fire barriers rated a	at: 3 hours		
]	Excep	ot: basemat (non-rated)		
Consisting	of the followi	na Rooms.	Fire De	etection	Fire Sunnres	sion	
EL	Room #	Potential Combustibles	Primary	Backup		1	
LL	ROOM #	1 otential comoustioles	1 Timar y	Бискир	1 Timar y	Бискир	
-2000	9101	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
		Class A combustibles		(at EXITs)			
		Transient combustibles					
		Transient compustibles					
			1				
		< 700	Anticipated combustible lo				
		700	Unsprinklered combustible	e load limit, MJ/m2			
	0:	. 11 1 0 1 .					
		nstalled fire extinguishing eq		n: I			
		None; will impede access			Fire Suppression Primary Backup		
Kadiol	Radiological release: None, no radiological mat				redundant trains A and B are op	erabie.	
М		Travel distance limits to	EXIIS MEET NFPA 101				
Manu		Access via stairwells					
	Property loss	S: Minor					

ĺ	Fire Area:	F9150	Description:	Cable Tunnel A			
	Building:	Tunnel	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-3			Electrical classification	: none	
		9A.2-4			ated divisional equipment or cables		
		9A.2-25			ndant trains or equipment or cables	: A	
			Surround	ded by fire barriers rated at:	3 hours		
				Except:	none		
Consisting	of the followin	g Rooms:	Fire Do	etection	Fire Suppre	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
1300	9150	Cable insulation	Area-wide ionization	Suppression flowswitch	Wet-pipe sprinkler 12.2 L/min per m2 over most remote 235 m2	Hose racks (in nearby stairwells) ABC fire extinguishers	
		> 1400 1400	Anticipated combustible lo		Assuming automatic & manual FF function, impact of design basis fi		
			quipment, impact of fire upo	on: 1	Complete burnout of all equipm this Fire Area results in loss of o	nly redundant train A	
Plant operation: None				on-site power source and related			
Kadiol	Radiological release: None, no radiological mat Life safety: Travel distance limits to E			-	divisions and train B on-site power source and related		
Monu		Access via stairwells	EATTS MEET NFFA 101	1	equipment are unaffected by fire	e and are operable.	
	Property loss:			1			
1	rroperty loss.	iviouerate		J			

	Fire Area:	F9160	Description:	Cable Tunnel B			
	Building:	Tunnel	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-3			Electrical classification	: none	
		9A.2-4		Safety-rela	ated divisional equipment or cables	none	
		9A.2-25				: B	
			Surround	ded by fire barriers rated at:	3 hours		
]	Except:	none		
			•				
	of the followin			etection	Fire Suppression Primary Wet-pipe sprinkler 12.2 L/min per m2 over most remote 235 m2 Assuming automatic & manual FP equipment does not		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
1300	9160	Cable insulation	Area-wide ionization	Suppression flowswitch	12.2 L/min per m2		
		> 1400 1400	Anticipated combustible lo		Assuming automatic & manual FF function, impact of design basis fi		
Assuming operation of installed fire extinguishing equation: Plant operation: Radiological release: Life safety: Manual firefighting: Property loss: Moderate None, no radiological ma Travel distance limits to 1 Access via stairwells Moderate		aterials present	on:	Complete burnout of all equipm this Fire Area results in loss of on-site power source and related divisions and train A on-site power unaffected by fire	only redundant train B d equipment; all safety wer source and related		

	Fire Area	: F9201	Description:	Controlled Access			
	Building	: Tunnel	Applicable codes:	IBC; Reg Guide 1.189;	9; NFPA 10, 14, 72, 101, 804		
		DCD Fig:		Bu	ilding code occupancy classification	F-1	
		9A.2-4			Electrical classification:	none	
		9A.2-13			elated divisional equipment or cables:		
					undant trains or equipment or cables:	none	
			Surround	ed by fire barriers rated a			
				Excep	t: basemat (non-rated); elevator d	oors (1.5 hr rated)	
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
	Ì		,	•	1	<u> </u>	
4650	9201	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
		Class IIIB lubricants		(at EXITs)			
		Class A combustibles					
		Transient combustibles					
		< 700	Anticipated combustible lo	oad MJ/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:		
] F	,,	Complete burnout of all equipme		
Assuming of	operation of in	stalled fire extinguishing eq	uipment, impact of fire upo	n:	this Fire Area affects no safe shu		
		None; will impede access			circuits; all safety-related equipr		
	Radiological release: None, no radiological ma				redundant trains A and B are op		
		Travel distance limits to			1		
Manu		Access via stairwells					
	Property loss						
				•			

9A.6 SPECIAL CASES

9A.6.1 Piping Penetrations, Reactor Building

Piping penetrations through the drywell wall have unique design considerations. The stress and containment requirements along with the temperature inputs to the concrete walls leave little design latitude. Some of these high-energy piping penetrations may not contain a 3-hr fire-resistive barrier as provided throughout the other ESBWR buildings. It is a COL license requirement to provide a detailed design with equivalent construction to tested wall assemblies when penetrating rated fire barriers or testing will be required. Refer to Subsection 9A.7.6 for COL information.

9A.6.2 Fire Door Deviations

The design of the nuclear facility must meet many criteria, including fire resistance. Fire doors are an example of compromise with other overriding design criteria that must also be met. Some doors, such as the airlock doors in the Reactor Building, form part of a pressure boundary and are of special construction. These doors generally have a backup fire door.

9A.6.3 Pipe Break Analyses

Per the criteria in Section 3.6, the high-pressure fire water systems require analysis for moderate energy lines.

9A.6.4 Fire Separation for Divisional Electrical Systems

There are cases where cables of more than one division are in relatively close proximity and require special justification. These areas are listed below and justification for each is provided.

9A.6.4.1 RPS Scram Circuits

Wiring to each of the four groups of scram solenoids is run in separate rigid, grounded steel conduits to prevent the possibility of exposing the scram solenoid circuits to a "hot" short (i.e., two energized switch legs of different group circuits shorted together that could inhibit the scram command to more than one group of control rods). No other wiring is contained within the conduits. Overheated conductors that are shorted to the conduits cannot cause an unsafe failure because the solenoids are de-energized by shorts to ground and thus will create a safe condition. Separate grounded steel conduits are also provided for both the "A" and "B" solenoid circuits of the same scram group.

The air operated Scram Solenoid valves are part of the HCU assemblies (two solenoids per valve). They are safety-related and receive their divisional power (Division I or II) from Reactor Protection System (RPS) via the Scram Solenoid Fuse Panels. Separate fuse panels are provided for each scram group. Fuses associated with "A" and "B" solenoids of a single scram group are installed in separate panels or with appropriate separation within the same panel. Fire that causes a hot short on the cables feeding power to the scram solenoids can cause the associated fuses in the scram solenoid fuse panel to blow. The fault is limited to the loss of power to the associated solenoids and causes a half-scram or scram condition (a fail-safe condition).

The air header dump valves act as a diverse backup to the scram logic and are safety-related. Separate divisions of 240 VDC power energize the two air header dump valves. Power supply wiring to each solenoid is individually circuit-protected and run in separate steel conduit.

9A.6.4.2 MSIV Closure Circuits

Sensors used for the main steam isolation valve (MSIV) closure (via the leak detection system) are located in the Turbine Building and in the main steam line (MSL) tunnels. These sensors are classified as Class 1E devices and use fire-retardant cabling to connect to the Main Control Room.

The safety-related devices and associated cabling are normally protected from flying objects and are physically separated. Because of the design and construction of the Turbine Building (not a Seismic Category I or a Class 1E safety-related area) it is possible for these sensors and their leads to be damaged during seismic or fire events in the Turbine Building. However, a fire in the Turbine Building is sensed by the Leak Detection and Isolation System (LD&IS) temperature monitors and causes MSIV closure before the fire burns out the equipment. No fire will propagate along the fire-retardant cabling to the control room and cause damage to the power sources.

The MSIV sensors and type are:

- MSIV Condenser Vacuum Pressure transmitter located in the Turbine Building
- MSL Turbine Inlet Pressure transmitter located in the Turbine Building
- Main Steam Line Tunnel Area Ambient Temperature temperature element located in the MSL Tunnel
- Main Steam Line Tunnel Area Ambient Temperature temperature element located in the Turbine Building

Backup trips for MSIV isolation, either direct or indirectly through the RPS, are caused by the turbine trip. Tripping of the MSIVs as a result of a fire in the Turbine Building is acceptable.

For the pressure transmitters and temperature elements, the signals are low-level analog current signals that are transmitted over a shielded twisted pair of conductors per transmitter. The cables are routed in separate grounded conduits on a divisional basis. Shorting together, shorting to ground, or opening a conductor in a current loop cable only affects the instrument associated with the cable. No damage will occur or propagate as a result of these possible failures.

In summary, failure of the MSIV sensors in the Turbine Building and their cables in any fashion is considered acceptable because a fire results in automatic closure of the MSIVs.

9A.6.4.3 Main Steamline Tunnel Area Temperature and Radiation Monitoring

These divisional detectors are physically located in the MSL tunnel area.

By design, this area has no exposed combustibles. The conduits and the detectors have some physical protection from the steam lines and hangers in the area making it improbable that a fire from below could damage the redundant sensors or cables.

Each radiation monitor has a downscale trip such that a low reading from the detectors will provide a trip. This trip is in addition to the normal upscale trip so that a failure in either direction results in a trip.

Leak detection temperature detectors of the MSL LD&IS measure ambient temperature around the MSL and will provide a MSIV isolation signal at fire-induced temperatures below the threshold of damage to the radiation monitoring cable. A common failure of the radiation monitor divisional cables only affects the radiation monitors and not the remainder of the divisional equipment.

9A.6.4.4 Main Steamline ADS Relief Valves

The main steamline ADS relief valves each have three solenoid valve pilots in close proximity at the valve operator. Each solenoid is powered from a different division with all four divisions utilized for the ten valves. If either solenoid is energized, the associated relief valve opens.

The divisional signal cables are run in separate conduits from their location on the valve to the appropriate divisional penetration and via divisional raceways to their multiplex interfaces.

These valves are located in a low fire loading area and are inaccessible during plant operation such that transient fire loading is not introduced. The containment is also inerted during operation.

The conduit is arranged so that the divisional cables exit the relief valve area in diverse directions

The solenoid valve coils are located inside metallic enclosures on each valve so that a fire inside the coil compartment of one pilot does not influence the coil or cable of the redundant pilot.

The ADS valves are arranged in two groups of four valves each with adequate spatial separation to ensure that disturbances (i.e., fire, pipe rupture phenomena, falling objects) affecting one group do not affect the other group. For line breaks requiring ADS for depressurization, the design ensures that at least four of the eight valves are available. During operation, a sustained fire is not possible in the inerted containment (drywell) area.

Electrically, the ADS logic system load drivers isolate the divisional signals from other components in their respective division, so that damage to the cable at the valves is limited to that particular cable. Electrical arcing damage to a cable or solenoid coil cannot result in inadvertent opening of the main valve because shorts, opens, or grounds at the solenoid cannot cause the solenoid to be energized. Short circuits at this location cannot jeopardize 1E power supplies because circuit resistance is sufficient to permit appropriate circuit protection coordination.

With this degree of redundancy, attention to design, electrical isolation, and containment inerting, plant safety is not compromised by having the divisional cables in close proximity at the ADS valves.

9A.6.4.5 Main Steamline Isolation Valve Control and Limit Switch Interfaces

There are eight MSIVs for isolating the MSLs, two in each MSL. The outboard MSIV on each MSL is located outside the primary containment in the main steam tunnel to the Turbine Building. The inboard MSIV on each MSL is located inside the inerted drywell.

The MSLs are arranged so that none of the valves are located vertically above any other MSIV.

The MSIVs are designed to "fail safe" in that loss of power to both solenoids causes closure isolation. For both the inboard and outboard valves, Division II power actuates Solenoid 2 and Division I power actuates Solenoid 3. Solenoid 1 is the test solenoid and is powered by Division I (outboard) and Division 2 (inboard).

The appropriate division of power is connected to limit switches that open when the MSIV closes to initiate a reactor scram trip signal to the divisional scram logic, and to stop MSIV closure during MSIV exerciser tests.

The MSIVs and the 90% open (10% closure test) contacts and the 92% open (scram) contacts are classified as safety-related components and comply with the separation and isolation requirements of IEEE 603. The 10% open limit switch contact of each MSIV provides position indication to the plant computer and to indicator lights.

The inboard MSIVs are contained within the inerted environment. Failure of the MSIV or its control and interlocking circuits that could be caused by a postulated fire outside the containment cannot prevent closure of at least one of the MSIVs in each line.

The closure of one MSIV does not result in a reactor scram. Because the outboard valve scram signals are redundant to the inboard valves on each line, a fire outside the containment does not affect the redundant capability to cause scram.

9A.6.4.6 Under the Reactor Vessel

This area contains the following electrical cables: Rod Control and Information System (RC&IS) cabling, Fine Motor Control Rod Drive (FMCRD) separation switch cables, neutron monitor system cabling, and other cables, as required. During reactor operation, the area cannot sustain fire because it is in an inerted atmosphere. All cables from the lower drywell are routed to the upper drywell via interconnecting risers. Both rigid and flexible conduit is used within the risers.

RC&IS Cables

The RC&IS cables are routed under the vessel through pull boxes inside the pedestal, then through cable boxes and raceways to electrical containment penetrations. RC&IS hardwired cables are routed from these containment penetrations to the RC&IS Reactor Building panels located in clean areas of the Reactor Building.

All RC&IS cables (i.e., synchro cables, FMCRD brake and motor cables, reed switch rod position status cables) are contained in flexible metallic conduit under the vessel, arranged in the pull boxes mounted just above the CRD restraint structure. All of these RC&IS cables are classified as non-safety.

FMCRD Separation Switch Cables

The FMCRD cables for the Class 1E separation switches of each FMCRD are classified as safety-related and separated into two groups (A and B) for routing out of the under vessel area to two separate divisions of the essential multiplexing system. The cables are routed under the vessel through pull boxes inside the pedestal; then through cable boxes and raceways to electrical containment penetrations. The separation switch cables are then routed from the containment penetrations to essential multiplexing system panels in the Reactor Building. The installation of

these Class 1E cables is arranged so that A and B cables travel in opposite directions from under the vessel and pass through penetrations on the opposite side of the Reactor Building.

The cables receive low-voltage (48 volts) power from the essential multiplex system power supplies. This provides natural circuit protection in event of shorts or grounds on the system. Such events do not jeopardize the integrity or independence of the higher voltage divisional power busses upstream of the power supplies.

Local Power Range Monitor (LPRM) Cables

The LPRM cables are individually contained in flexible metallic conduit under the vessel. These cables are divided into four divisions of cabling, corresponding to the four divisions of the neutron monitoring system.

The cabling is also supported on the control rod drive housing flanges. The cabling is routed along particular rows of housing flanges. The Division I and III cables are routed under vessel to the 0° to 180° half of the core, whereas Division II and IV cables are routed under vessel to the 180° to 360° half of the core. The cabling is then routed through the pedestal and drywell in enclosed solid bottom cable tray in a manner that brings the Division I LPRM cables into the 0° to 90° quadrant of the lower drywell; Division II into the 180° to 270° quadrant; Division III into 90° to 180° quadrant; and Division IV into the 270° and 360° quadrant. Once in the upper drywell, the cables continue in separated divisional cable raceways and penetrations.

Startup Range Neutron Monitor (SRNM) Cables

The cables for the SRNM detectors are individually contained in flexible metallic conduit. These cables are routed along with and pass through the same divisional penetrations as the LPRM cables.

Other Cables

All other cables under the pedestal are classed as non-divisional. These cables are routed in rigid or flexible metallic conduit through non-divisional conduit openings in the pedestal wall to non-divisional cable raceways in the containment.

Fire Damage Analysis

The containment is inerted during operation therefore a fire is not possible. Additionally the following tend to reduce the risk from a fire.

A fire within a conduit is contained in the individual conduit without damage to the surrounding conduit.

The non-divisional cabling in the conduit is low voltage, fault-protected cable and not likely to be involved in an electrically generated fire internal to the conduit.

The space under the reactor vessel is devoid of combustible material except for the cable insulation inside the various conduits.

Administrative procedures to control combustible materials are provided. These procedures prohibit combustibles from being stored in areas with divisional cable or within electrical equipment areas.

Maintenance during reactor shutdown can involve welding in the area under the vessel. Administrative procedures require special fire protection during welding or other maintenance operations and housekeeping procedures are provided.

Therefore the design features in the area under the vessel are adequate for protecting the redundant trains from damage by fire.

9A.6.4.7 Local Instrumentation and Control Equipment

Divisional safety-related panels are generally designed and located to serve a single division. Multidivisional panels and racks are located in divisional compartments with physical separation between divisions.

The incoming cables for each division are in separate conduit and where possible the conduit is embedded in concrete.

Some areas contain more than one division of instrumentation needed to isolate redundant sets of isolation valves, HVAC, or for some other purpose requiring redundancy.

9A.6.4.8 Leak Detection Instrumentation

Temperatures, pressures, radiation levels, and process flows are measured to detect leakage of reactor coolant into or within the containment.

Sensors of redundant divisions are used in the plant areas to detect leakage from the reactor coolant pressure boundary and to generate signals ultimately used to provide isolation closure signals to the containment isolation valves. Sensors are part of each individual system being monitored, whereas the Leak Detection and Isolation System (LD&IS) comprises the interface between these sensors and the Safety System Logic and Control (SSLC) system to identify leakage and initiate containment isolation. Containment isolation is a safety-related function but is not necessary for post-fire safe shutdown.

The divisional sensors are located in separate detector assemblies and the signal lead cables are brought out in separate rigid (or flexible) metal conduit. The sensors are distributed within a room or along parallel piping to provide redundancy. Shorting and/or grounding of these cables due to postulated fire does not jeopardize the emergency power busses because the low-voltage power supplies that feed the transmitters are current-limited. Loss or spurious actuation of these signals due to a fire does not affect safe shutdown.

9A.6.4.9 Standby Liquid Control

The Standby Liquid Control System (SLC) is comprised of two independent loops. Each loop is located entirely in one fire area, and as such a fire in one division will not damage equipment in the other division. The SLC equipment is all divisionally separated except for the squib injection valves which each have two coils powered by separate safety-related DC power divisions. If a fire were to occur and damage both divisional power supplies to the squib injection valves, the effects would be limited spurious operation or failure of the squib injection valves and no other divisional equipment would be affected. Spurious operation or failure of SLC system does not affect safe shutdown.

The control cabling is routed in separate conduit or trays for each division, separated from each other, to meet IEEE 384. Conduit is embedded in concrete where feasible.

Postulated fire damage that causes a hot short to the electrical cables in the SLC area could inadvertently result in injection of boron. Fire could also open the cabling to a squib valve thus preventing opening of the valve on command from the Main Control Room.

9A.6.4.10 Reactor Building Operating Deck Radiation Monitors

Radiation monitoring within this area is provided by two independent systems, the area radiation monitoring system and the process radiation monitoring system.

The area radiation monitoring (ARM) system is nonsafety-related and monitors radiation in the fuel storage and handling areas. It has no system actuation function but is used for monitoring of background radiation and radiation resulting from postulated accidental fuel drops. The sensors are mounted on the walls within the fire zone area. These detectors are designed to annunciate local and control room alarms for both high and low radiation conditions. The low condition is an indication of a defective sensor or an inoperative radiation monitor. Loss of these detectors from a fire does not affect plant safety.

The process radiation monitoring (PRM) channels in this area are safety-related and are used to monitor radiation in the air exhaust in the HVAC ducts. However, these sensors are not located directly in the fire area, but are on the main HVAC exhaust duct. Therefore, the sensors would not be exposed directly to an area fire, only to the exhausted smoke.

The PRM channels are designed such that any two-out-of-four signals, based on very high or very low radiation conditions within the HVAC duct, isolate the HVAC ducts in the refueling floor and the Reactor Building safety envelope area and initiate closure of the containment vent and purge ducts. The very low radiation trip assures the safety action is initiated on sensor failure.

The four divisions of PRM sensors are located within close proximity to each other to provide true two-out-of-four actuation logic. The arrangement is justified by the exhaust duct location (i.e., separate from the fire zone), and by the automatic actuation of the system's safety function should two or more sensors fail.

9A.6.4.11 Containment Isolation Valves

The primary function of each isolation valve is to close to isolate containment when isolation is required. In general, outboard isolation valves are assigned to Division I and inboard isolation valves to Division II. In some cases this results in Division I outboard isolation valves being located in Division II areas. This is acceptable from a functional standpoint because a fire in an area outside of containment and involving the penetration is assumed to disable the system whether or not the outboard isolation valve is disabled. If the valve is open at the time of the fire it could fail in the open position but the inboard valve is not involved in the fire and closes on demand. It is a requirement that cables for outboard valves located in fire areas of a division different than the division of the valve not be routed through fire areas containing any circuitry associated with the inboard valve of the isolation pair.

9A.6.4.12 Main Control Room Separation

All four divisions are present in the Main Control Room. In the event of a fire the Main Control Room is evacuated and plant shutdown is controlled from the independent divisionally separated Remote Shutdown System. Operators can evacuate the Main Control Room after scramming the reactor. The Safety System and Logic Control (SSLC) automatically actuates the safety systems. The postulated fire assumes loss of all component functions within the Main Control Room, and spurious actuations are considered in the analysis. In order to cool the plant down, the operators can control the nonsafety-related systems from either Remote Shutdown System (RSS) panel, located in separate fire areas within the Reactor Building.

9A.6.5 Comparison to BTP SBLP 9.5-1 and Regulatory Guide 1.189

The ESBWR fire protection design follows the recommendations of BTP SPLB 9.5-1 and Regulatory Guide 1.189 with the following exceptions:

9A.6.5.1 No Fire Detection within Electrical Cabinets in Main Control Room Complex

Section 7.1.4 of BTP SPLB 9.5-1 recommends that electrical cabinets should be protected as described in Regulatory Guide 1.189. Section 6.1.2.2 of Regulatory Guide 1.189 states in part:

"Smoke detectors should be provided in the control room, cabinets, and consoles."[f76][f77] Consoles and electrical cabinets do not have fire detectors installed inside them.

Justification: The electrical cabinets and consoles contain limited combustibles and are air-cooled so that smoke from an interior fire will exhaust to the room. Early warning fire detection, primarily consisting of ionization smoke detectors, is provided in all rooms containing consoles or electrical cabinets. A fire in any single cabinet or console will not disable the capability to safely shut down the plant. Except in the Main Control Room Complex, all safety-related electrical cabinets and consoles are located in divisional rooms, and all divisional rooms are separated from each other by 3 hour fire-rated barriers such that a single fire will not affect electrical cabinets or consoles from multiple divisions. The Main Control Room Complex is continuously manned so that any fire will be quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire. In the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division I or II Remote Shutdown System (RSS) panels (located remotely from Main Control Room, in the Reactor Building) enable the operators to bring the reactor to a safe shutdown.

9A.6.5.2 No Automatic Fire Suppression in Office Areas of Main Control Room Complex

Section C.8.1.2.c of BTP SPLB 9.5-1 recommends that automatic suppression capability should be provided in the Control Room Complex as described in Regulatory Guide 1.189. Section 6.1.2 of Regulatory Guide 1.189 states in part:

"Peripheral rooms in the control room complex should have automatic water suppression..."

The office spaces contained in the Main Control Room Complex do not have automatic fire suppression systems installed.

Justification: The Main Control Room Complex is considered to be a low risk fire area, due to the lack of high- or medium-voltage equipment or cabling. Interior finishing materials within the

Main Control Room Complex are noncombustible or have a flame spread and smoke developed rating of 25 or less. The amount of transient combustibles within this fire area is limited. Papers within the Main Control Room Complex are stored in file cabinets, bookcases, or other storage locations except when in use. Ionization or photoelectric smoke detectors are installed throughout the Main Control Room Complex to provide early warning of fire during the incipient stage. The Main Control Room Complex is continuously manned so that any fire will be quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire. Should manual fire fighting in the Main Control Room Complex be necessary using either portable fire extinguishers or hand held fire hoses, accumulation or drainage of fire water will not affect the ability to safely shutdown the reactor. If the fire water is assumed to transport immediately to the basement of the Control Building, the resulting accumulation of water will not affect safety-related equipment located in the basement. In either case, the fire fighting activities will not prevent the reactor from being safely shutdown.

Finally, in the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division I or II Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enable the operators to bring the reactor to a safe shutdown.

9A.6.5.3 No Automatic Fire Suppression Below Raised Floor in Main Control Room Complex

Section C.8.1.2.c of BTP SPLB 9.5-1 recommends cable raceways under raised floors should be reviewed to determine if adequate fire detection and suppression are provided for potential fires in these areas. Section 6.1.2.1 of Regulatory Guide 1.189 states in part:

"...Fully enclosed electrical raceways located in under-floor and ceiling spaces, if over 0.09 m2 (1 sq ft) in cross-sectional area, should have automatic fire suppression inside."

The Main Control Room Complex has a 0.6 meter (2 foot) deep raised floor over a subfloor volume which is used for routing of cables between the electrical cabinets, control panels, computer equipment, and the divisional electrical rooms. Divisional separation of the subfloor cabling is maintained per the requirements of IEEE 384. The subfloor volume includes full fire detection but does not include any automatic fire suppression system.

Justification: The Main Control Room Complex and subfloor volume is considered to be a low risk fire area, due to the lack of high- or medium-voltage equipment or cabling. The characteristics of the subfloor cables are such that the probability of a fire ignition is very low and any fire that were to occur would be self-extinguishing or very slow to spread. No transient combustibles stored in the subfloor volume during normal activities to increase the severity of a possible fire. Ionization smoke detectors are installed throughout the subfloor volume to provide early warning of fire during the incipient stage. The raised floor consists of noncombustible sectional panels can be individually removed to provide fire-fighting access to a subfloor fire. Because the Control Room is continuously manned, manual fire suppression activities would be initiated quickly upon discovery of a fire in the subfloor volume. Since fire resistant cables are required, the amount of water needed to extinguish a fire within the subfloor volume is relatively small. Any water that is introduced into the subfloor volume can be removed by floor drains in the subfloor volume or through the use of temporary portable sump pumps. Accumulation of water in the subfloor volume is limited in depth to less than the raised floor height and will not

adversely affect water sensitive safety-related equipment which is installed above the raised floor. Effectiveness of a permanently installed fire suppression system within the subfloor volume may be somewhat limited due to the relatively small height between raised floor and top of cabling, as well as physical barriers within the subfloor volume to meet IEEE 384 separation criteria. Not including automatic fire suppression within the subfloor volume has the indirect benefit of avoiding the potential for missiles (from gaseous suppression cylinders) or flooding/wetting (from water piping) during maintenance or testing activities to affect safety-related equipment within the Main Control Room Complex.

Finally, in the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division I or II Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enable the operators to bring the reactor to a safe shutdown

9A.6.5.4 Diesel Day Tank Capacity within Building

Section C.8.1.8.b of BTP SPLB 9.5-1 recommends that diesel day tanks comply with Regulatory Guide 1.189. Section 6.1.8 of Regulatory Guide 1.189 states in part:

"Day tanks with total capacity up to 4164 L (1100 gallons) may be located in the diesel generator area under the following conditions:

a. The day tank is located in a separate enclosure with fire resistance rating of at least 3 hours"

Based on the large size of the nonsafety-related diesel generators, the capacity of each of the diesel day tanks will likely exceed 4164 L (1100 gallons) to allow enough fuel for at least 8 hours of diesel operation at the maximum load demand and is expected to exceed BTP recommended limits.

Justification: The ESBWR design includes two independent and physically separated nonsafety-related diesel generators, either of which are capable of providing the full electrical load for the redundant nonsafety-related electrical buses. Neither diesel generators is necessary to achieve and maintain safe shutdown conditions for the 72 hour period following an accident or fire event. Each day tank is located in the Electrical Building in a dedicated 3 hour fire rated compartment of masonry or concrete construction. There is no safety-related equipment located in the same building as the day tank rooms. The day tank rooms are located in individual fire areas adjacent to the Diesel Generator (DG) rooms and are positioned such that the 3 hour fire rated walls, ceiling, and floor of the day tank room are not common to the other redundant DG.

Each day tank room is protected by a foam water deluge system that can deliver foam to the room for a minimum of 30 minutes without operator intervention. The day tank is seismically designed and supported. Potential ignition sources inside the day tank rooms with enough energy to ignite diesel fuel are limited. Furthermore, the supply of fresh air to support combustion is limited. In the event of a fire, the automatic foam water deluge system is designed to extinguish a fire in this room in 10 minutes. In the unlikely event the day tank were to fail, the entire contents of the day tank plus foam water can be contained in the sunken volume of the day tank room. Additional foam capacity beyond 10 minutes provides added assurance that a postulated fire will be extinguished. In the unlikely event the fire cannot be extinguished, the

day tank room can be isolated by closing doors and dampers to allow the fire to burn out on its own without spreading to other fire areas.

In the event that the fuel oil transfer line from the day tank to the DG were to fail outside of the day tank room, the curbed area within the DG room can accommodate the contents of the day tank plus foam water applied by the preaction foam water automatic sprinkler system. This automatic sprinkler system is designed to extinguish a fire within the DG room within 10 minutes. In the unlikely event the fire is still not extinguished, the DG room can be closed off isolated by closing doors and dampers to allow the fire to burn out on its own without spreading to other fire areas. Alternatively, if the fire brigade is required to fight the fire manually, the curbed area within the DG room can accommodate additional water/foam application from two hand-held foam hose lines before reaching the lowest door opening. The lowest door opening to these rooms are the exterior equipment doors which could be opened if fire fighting activities necessitate so that any overflow would spill outside the building and not spread to other parts of the electrical building. Therefore, any overflow from the sump area of the room will not affect any other equipment, nor will it affect safe shutdown equipment or equipment needed for support of safe shutdown equipment.

9A.6.5.5 Allowing Continued Diesel-Generator Operation During a Fire

Section 8.1.8.c of BTP SPLB 9.5-1 recommends that effects of suppression systems on operating generators should be addressed in the fire hazard analysis. Section 6.1.8 of Regulatory Guide 1.189 states in part:

"Automatic fire suppression should be installed to suppress or control any diesel generator or lubricating oil fires. Such systems should be designed for operation when the diesel is running without affecting the diesel."

The automatic sprinkler systems in the diesel generator rooms are installed to extinguish any fire in those rooms and do not place restrictions on the positioning and direction of the application of the fire suppressant.

Justification: The automatic sprinkler systems used in the diesel generator rooms are designed to prevent inadvertent actuation by utilizing preaction automatic sprinkler type. The sprinkler piping and closed head sprinklers are pneumatically supervised for leakage, and any inadvertent actuation of the deluge valve during testing or maintenance will not result in water release due to the closed sprinkler heads.

Two actuation signals are required to automatically actuate the deluge valve, the first of which will annunciate an alarm to alert the operators to any potential problems. Automatic actuation of the sprinkler system to release water requires three independent events: 1) detection of a specific range of infrared wavelengths, consistent with burning oil, by at least one infrared detector; 2) detection of a significant heat release by at least one heat detector; and, 3) opening of at least one fusible link sprinkler head. Furthermore, each redundant diesel generator has its own dedicated fire detectors and preaction deluge valve for the control of the fire sprinklers in that room, and loss of power to the deluge valve does not cause actuation.

The ESBWR design includes two independent and physically separated nonsafety-related diesel generators, either of which are capable of providing the full electrical load for the redundant nonsafety-related electrical buses. Neither diesel generators is necessary to achieve and maintain

safe shutdown conditions for the 72 hour period following an accident or fire event. The ESBWR design also includes four independent and physically separated safety-related divisions, any two of which are capable of bringing the plant to a safe shutdown in the event of a fire. For design purposes, it is assumed that a fire anywhere in a fire area results in the immediate loss of function of all equipment associated with that division. Even with this conservative assumption, the remaining independent safety-related divisions are available for full utilization by the operators.

9A.6.5.6 No Automatic Fire Suppression in Safety-Related Computer Rooms

Section 8.1.4 of SPLB BTP 9.5-1 recommends protecting computer rooms with fire protection systems as described in Regulatory Guide 1.189. Section 6.1.4 of Regulatory Guide 1.189 states in part:

"Computer rooms for computers performing functions important to safety that are not part of the control room complex should be separated from other areas of the plant by barriers having a minimum fire resistance rating of 3 hours and should be protected by automatic detection and fixed automatic suppression."

Computer rooms containing safety-related equipment do not have fire suppression installed inside them.

Justification: Computer rooms are considered to be low risk fire areas, due to the lack of highor medium-voltage equipment or cabling. Interior finishing materials within computer rooms are noncombustible. The amount of transient combustibles within computer rooms is limited. Papers within computer rooms are stored in file cabinets, bookcases, or other storage locations except when in use.

Ionization smoke detectors are installed throughout computer rooms to provide early warning of fire during the incipient stage. The Main Control Room Complex is continuously manned so that any fire will be quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire in a computer room. Should manual fire fighting in a computer room be necessary using either portable fire extinguishers or hand held fire hoses, accumulation or drainage of fire water will not affect the ability to safely shutdown the reactor. If the fire water is assumed to transport immediately to the basement of the building, the resulting accumulation of water will not affect safety-related equipment located in the basement. In either case, the fire fighting activities will not prevent the reactor from being safely shutdown.

Except in the Main Control Room Complex, all safety-related computers are located in divisional rooms, and all divisional rooms are separated from each other by 3 hour fire-rated barriers such that a single fire will not affect computer equipment from multiple divisions. In the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division I or II Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enable the operators to bring the reactor to a safe shutdown.

9A.6.6 Comparison to International Building Code

The ESBWR fire protection design follows the IBC requirements with the following exceptions. Nonetheless, these "alternative methods" of fire protection for unsprinklered Reactor, Control, and Fuel Buildings as well as unsprinklered portions of the Turbine and Electrical Buildings

would require approval from the building code authority during the building permit process as allowed by Section 104.11 of the IBC. The COL licensee shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternative method" of fire protection for unsprinklered buildings which are discussed in the following subsections. Refer to Subsections 9A.7.7-9A.7.11 for COL information.

9A.6.6.1 Underground Structures without Sprinkler Protection

Section 405.3 of the International Building Code (IBC) requires automatic sprinkler protection throughout all underground levels where the lowest level is more than 9.144 m (30.0 ft) below grade. The lowest levels of the Reactor and Fuel Buildings are more than 16 m (52.5 ft) below grade, and the lowest level of the Control Building is more than 12 m (39.4 ft) below grade. In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is proposed for these levels. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings; this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies;
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<1400 MJ/m²) within the underground electrical rooms in the Reactor, Fuel, and Control Buildings;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<700 MJ/m²) within the unsprinklered underground non-electrical rooms in the Reactor, Fuel, and Control Buildings;
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Control Buildings, which exceeds the IBC minimum requirement for similar occupancies; these initiate a fire alarm signal to the constantly manned Control Room;
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Fuel Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies.

9A.6.6.2 Buildings Containing Large Fire Areas, without Sprinkler Protection

Section 903.2.3.1 of the IBC requires automatic sprinkler protection throughout buildings that contain a single Group F-1 occupancy fire area that exceeds 1115 m². The unsprinklered Reactor Building contains fire area F1600 which exceeds 1115 m²; the unsprinklered Fuel Building contains fire area F2100 which exceeds 1115 m²; and the partially sprinklered Turbine Building contains fire area F4100 which exceeds 1115 m².

Additionally, section 903.2.3.3 of the IBC requires automatic sprinkler protection throughout buildings where the combined floor area of all Group F-1 occupancy fire areas exceeds 2230 m². The unsprinklered Reactor Building, unsprinklered Fuel Building, and partially sprinklered Turbine Building each contain multiple F-1 fire areas that cumulatively exceed 2230 m².

In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is proposed throughout these buildings. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings; this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1 and 9A.5-2, low fire loadings (<700 MJ/m²) within the fire areas F1600 and F2100 in the Reactor and Fuel Buildings;
- As shown in Table 9A.5-4, low fire loadings (<700 MJ/m²) within the unsprinklered portion of the Turbine Building fire area F4100;
- As shown in Table 9A.5-4, automatic fire suppression throughout Turbine Building rooms that contain significant fire hazards (>700 MJ/m²); these consist of sprinkler, deluge, or carbon dioxide flooding systems that each initiate a fire alarm signal to the constantly manned Control Room;
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Turbine Buildings, which exceeds the IBC minimum requirement for similar occupancies; these initiate a fire alarm signal to the constantly manned Control Room;
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Turbine Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies;
- Sprinklers installed under the very tall ceilings in fire areas F1600, F2100, and F4100 would be ineffective against a floor level fire; the extreme height would likely prevent sufficient heat from reaching sprinkler heads to actuate them;
- Subdividing fire areas F1600, F2100, and F4100 into fire areas less than 1115 m² size is not feasible due to the large machinery and access requirements in these areas;

9A.6.6.3 Building Containing Fire Areas more than Three Stories Above Grade, without Sprinkler Protection

Section 903.2.3.2 of the IBC requires automatic sprinkler protection throughout buildings that contain a single Group F-1 occupancy fire area that is located more than three stories above grade. Elevation 34000 of the unsprinklered Reactor Building is located more than three stories

above grade. Elevations 22000 and 27000 of the partially sprinklered Electrical Building are both located more than three stories above grade.

In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is proposed for these levels. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings; this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies;
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1 and 9A.5-6, low fire loadings (<1400 MJ/m²) within the unsprinklered electrical rooms in the Reactor and Electrical Buildings;
- As shown in Tables 9A.5-1 and 9A.5-6, low fire loadings (<700 MJ/m²) within the unsprinklered non-electrical rooms in the Reactor and Electrical Buildings;
- As shown in Table 9A.5-6, automatic fire suppression throughout Electrical Building non-electrical rooms that contain significant fire hazards (>700 MJ/m²); these consist of sprinkler or deluge systems that each initiate a fire alarm signal to the constantly manned Control Room;
- Complete Class A supervised fire detection throughout the Reactor and Electrical Buildings, which exceeds the IBC minimum requirement for similar occupancies; these initiate a fire alarm signal to the constantly manned Control Room;
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, and Electrical Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies;
- Sprinklers installed under the very tall ceiling in Elevation 34000 of the Reactor Building would be ineffective against a floor level fire; the extreme height would likely prevent sufficient heat from reaching sprinkler heads to actuate them.

9A.6.6.4 Lack of Fire Fighter Exterior Access Openings, without Sprinkler Protection

Section 903.2.10 of the IBC requires automatic sprinkler protection throughout buildings that do not have 1.9 m² (20.5 ft²) minimum size openings (doors or windows) within each 15 m (49.2 ft) of exterior wall. These openings are intended for fire fighter access into the building during a fire. The exterior walls of the Reactor, Fuel, and Control Buildings do not contain such openings. In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is proposed throughout these buildings. This is acceptable for the following reasons:

• Noncombustible Type I-A concrete construction in these buildings;

- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings; this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies;
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<1400 MJ/m²) within the underground electrical rooms in the Reactor, Fuel, and Control Buildings;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<700 MJ/m²) within the unsprinklered underground non-electrical rooms in the Reactor, Fuel, and Control Buildings;
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Control Buildings, which exceeds the IBC minimum requirement for similar occupancies; these initiate a fire alarm signal to the constantly manned Control Room;
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Fuel Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies;

Adding enough exterior openings to comply with Section 903.2.10 would impose an unacceptable security risk.

9A.7 COL INFORMATION

- 9A.7.1 The COL applicant shall establish fire hazard design acceptance criteria for the Service Water/Water Treatment Building and Service Building (Refer to 9A.1).
- 9A.7.2 The COL applicant shall include drawings showing the fire area separation and fire protection features for the Yard buildings, Service Water/Water Treatment Building, and Service Building (Refer to 9A.2.2).
- 9A.7.3 The COL applicant shall include fire zone drawings for those portions of the Yard except for that associated with Turbine and Electrical Building equipment (Refer to 9A.4.7).
- 9A.7.4 The COL applicant shall design the Service Building fire protection features (Refer to 9A.4.8).
- 9A.7.5 The COL applicant shall design the Service Water/Water Treatment Building fire protection features (Refer to 9A.4.9).
- 9A.7.6 The COL holder shall provide detailed design for piping penetrations in the Reactor Building with equivalent construction to tested wall assemblies when penetrating rated fire barriers, or fire testing will be required. The COL licensee shall provide a reliable design for piping penetrations in the Reactor Building with equivalent construction to tested wall assemblies when rated fire barrier testing is required (Refer to 9A.6.1).
- 9A.7.7 The COL holder shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternate method" of fire protection for the unsprinklered Reactor Building, involving underground levels (Refer to 9A.6.6.1), large fire areas (Refer to 9A.6.6.2), three or more stories above grade (Refer to 9A.6.6.3), and lack of exterior access openings for fire department personnel (Refer to 9A.6.6.4).
- 9A.7.8 The COL holder shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternate method" of fire protection for the unsprinklered Fuel Building, involving underground levels (Refer to 9A.6.6.1), large fire areas (Refer to 9A.6.6.2), and lack of exterior access openings for fire department personnel (Refer to 9A.6.6.4).
- 9A.7.9 The COL holder shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternate method" of fire protection for the unsprinklered Control Building, involving underground levels (Refer to 9A.6.6.1) and lack of exterior access openings for fire department personnel (Refer to 9A.6.6.4).
- 9A.7.10 The COL holder shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternate method" of fire protection for the partially sprinklered Turbine Building, involving large fire areas (Refer to 9A.6.6.2).
- 9A.7.11 The COL holder shall obtain approval from the appropriate authority having jurisdiction prior to construction for the "alternate method" of fire protection for the partially sprinklered Electrical Building, involving three or more stories above grade (Refer to 9A.6.6.3).